THE OIL WEEKLY

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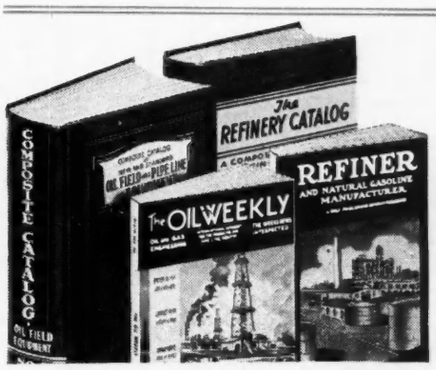

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The Oil Man's Calendar

DEC.	
14–15	**Petroleum Electric Power Association, Texas State Hotel, Houston, Texas.**
18	**Mid-Continent Oil & Gas Association, Board of Directors, Tulsa, Okla.**
JAN.	
12–13	**Louisiana Engineering Society, St. Charles Hotel, New Orleans.**
FEB.	
12–15	**American Institute of Mining & Metallurgical Engineers, New York.**
MAR.	
14–15	**American Petroleum Institute. Mid-Continent District, Division of Production, Wichita, Kansas.**
28–29	**American Petroleum Institute, Southwestern District, Division of Production, Houston, Texas**
31	**Western Petroleum Refiners Association, Wichita, Kansas.**
APR.	
10–12	**American Association of Petroleum Geologists, Chicago.**
11–12	**American Petroleum Institute, Eastern District, Division of Production, Columbus, Ohio.**
18–19	**National Petroleum Association, Cleveland, Ohio.**
MAY	
18–25	**International Petroleum Exposition & Congress, Tulsa.**
26–27	**Petroleum & Natural Gas Conference, State College, Pa.**
27–31	**American Petroleum Institute, Mid-Year Meeting, Ft. Worth, Tex.**

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THE OIL WEEKLY

DECEMBER 18, 1939

VOLUME 96 NUMBER 2

The Week's Panorama

FINALLY, after 10 years, the busy days of 1929 are here again. The Federal Reserve Board has estimated that industrial production rose in November to 125 percent of the 1923-1925 average, thereby equaling the all-time peak of June, 1929. The top of the 1936-1937 boom was 121, reached in December, 1936.

The 125 of November, 1939, compared with 120 in October, 111 in September, and this year's low of 92, recorded in April and May. In November of last year, the index was at 103.

Inventory Situation . . . . . .

The oil industry's inventory situation continues lopsided, with gasoline stocks excessive, while supplies of light and heavy fuel oils, lubricants, and crude oil, are relatively small.

Having increased almost a million barrels in the week ended December 9, gasoline stocks stood at 77,196,000 barrels, or 10.1 percent higher than at the corresponding time last year, when the storage was seriously burdensome. While this further large build-up of stocks has occurred, gasoline demand has expanded only around 5 percent. Thus the gasoline inventory situation is less favorable now than a year ago.

Cole Hearing . . . . . .

Although the hearing of the Cole subcommittee at New Orleans last week was cut short by the death of Committeeman Mapes, it furnished additional evidence of strong opposition to the Cole bill by oil men as well as state oil conservation officials.

In connection with the meeting it was disclosed, also, that stronger state control is in prospect. Mississippi proposes to strengthen its conservation machinery, by providing for allowables; and California will work again toward inauguration of state proration, despite defeat of the recently enacted conservation bill by referendum.

Low-Rate Imports . . . . . .

Under presidential proclamation, the imports of crude and fuel oil into the United States at the ¼ cent a gallon rate from December 16, 1939, to December 31, 1940, have been allocated definitely among source-countries, on the basis of production in the first 10 months this year. Venezuela will benefit most greatly, and Mexico will be able to ship in only a relatively small amount at the reduced tariff rate. All imports at the ¼-cent rate instead of the regular ½-cent tax will amount to about 60,000,000 barrels annually, having been limited to 5 percent of refinery runs of domestic crude. Quotas set up for sharing in the special tariff are as follows: Venezuela, 71.9 percent of the total low-rate imports, Netherlands and possessions, 20.3 percent, Colombia 4 percent, and all other countries, including Mexico, 3.8 percent.

Mexico Appraises Seizure . .

Mexico's ambassador at Washington last week said that any further developments in the oil expropriation would not be likely until after the evaluation of the properties, which began December 12, and which must be completed within 60 days. The ambassador said that negotiations between the Mexican government and the American oil companies were unchanged since August, when the state department offered a compromise solution.

The oil companies have declined to name appraisers to work with the Mexican government in evaluating the properties, as permitted under the law, because they have not recognized legality of the expropriation. American oil companies have called upon the United States government to demand that Mexico return the seized properties.

Germany's Oil Needs . . . . .

The newspaper "Handelsblad" at Amsterdam has expressed the opinion that Germany may have to wage a *blitz-krieg*, because of a deficiency of oil. The paper estimated Germany's war-time requirements at more than 10,000,000 tons (about 70,000,000 barrels) annually, or at least twice the peace-time needs of 1938. Only about one-half of such war-time needs are available, in the opinion of the publication, which estimated a deficiency of at least 5,000,000 tons (about 35,000,000 barrels) annually. Greater Germany's current production of crude oil was estimated at 700,000 tons (5,000,000 barrels) and synthetic output, by hydrogenation, at the former rate of 2,000,000 tons (about 14,000,000 barrels) a year; and it was estimated that imports could not exceed 3,000,000 tons (about 21,000,000 barrels), including a top of 2,000,000 tons (14,000,000 barrels) from Rumania, 500,000 tons (3,500,000 barrels) from Russia, and 500,000 tons (3,500,000 barrels) from other countries. The paper said that accumulated stocks probably could not relieve the deficiency greatly, the storage having been estimated as not over 9 months' consumption.

Temperature Effects On

By MICHEL T. HALBOUTY
Consulting Geologist and Engineer

FROM the surface to depths as great as 13,000 feet, the changes in temperatures that are encountered have a decided bearing upon drilling technique and supervision, and equipment used in oil well drilling. There are cases on record where the total loss of a drilled hole was attributed to the existing earth temperature at great depths. Some of the most important effects of temperatures under drilling conditions are briefly discussed below.

(1) Rotary Drilling Fluid

One of the most important effects of temperature upon drilling is the effect of increased temperature on drilling mud, such as:

(a) *Effect of Temperature Variations on Mud Weight or Density.*

Increasing the temperature of drilling mud slightly lowers its density, however, this effect is negligible in ordinary cases. At its boiling point, water's density is only 4 percent less than at the freezing point and this slight variation is of minor importance.

(b) *Effect of Temperature Variations on Drilling Mud Viscosity.*[1]

Drilling muds usually exhibit a minimum viscosity at some point in the range of 100° F. to 140° F., but muds are not entirely consistent in this regard. (For example, a mud was recently encountered which showed a lower viscosity at 180° F. than at a lower temperature). At high temperatures, chemical mud thinners are less effective, and their effect shorter lived than at low temperatures. This makes viscosity control generally much more difficult when the muds are hot, having temperatures above 140° F.

(c) *Effect of Temperature Variations on Well Building Properties of Drilling Muds.*

Increased temperatures invariably increase the cake thickness and volume of water filtering from the mud into the formations.[2] This effect is due to two causes, First, the rate of filtration varies inversely as the square root of the viscosity of the filtrate (water). Increased temperature decreases the viscosity of the filtrate from mud, hence increases the total amount of filtration as measured by cake thickness and volume of filtrate. Secondly, increasing temperature generally results in increased solubility of slightly soluble mud flocculating materials in water, the fluid phase of the mud. An increase in the amount of dissolved material increases the flocculation of the mud and this results in poorer wall building properties.

Summing up, increased drilling mud temperatures usually add to the problems of mud control by increasing the mud's viscosity, hence making viscosity control more difficult and also decreasing the effectiveness of the mud in its wall building operations in the hole.

(2) Rotary Drilling and Coring Bits

Very few studies have been made on the effect of drilling bits while drilling in various types of formations, or, if such studies have been made, the writer has not been able to obtain access to the data. However, it has been observed by major tool companies, who manufacture drilling bits, that temperatures in excess of 350° F. would, in all probability, reduce the effectiveness of rock bits and core bits.[3] The exposure of the toothed cutters in roller bits designed for drilling hard formations, to temperatures of 350° F. and above will soften the case hardened structure and probably result in an inferior performance of the bearings.

Based on observation, however, it is the opinion of the writer that the temperature on bits resulting from friction in drilling a hard formation with 6000 pounds and 8000 pounds weight on the bit will be far in excess of 350° F. Although the drilling mud helps greatly in keeping the bit cool, the high friction temperature is perhaps the principal reason for a case-hardened rock bit drilling less than 10 feet of hole in extreme cases.

(3) Rotary Drill Pipe and Tool Joints

In present drilling to depths of 13,000 feet, the temperature effects on drill pipe and tool joints will not impose any additional limitation on the safe use to which this equipment can be exposed. It is reasonable to assume that 350° F. will not adversely affect our present drill pipe and tool joints and it is doubtful that temperatures as high as 350° F. will be encountered until depths of 15,000 feet to 20,000 feet are reached.

Oil Well Drilling

As wells have drilled to constantly greater depths, increasingly higher temperatures have been encountered and it is now recognized that this condition will have important influences on oil and gas drilling and producing methods. Consequently, the accompanying report on this subject is of interest and value. No attempt is made to review every particular phase where temperature affects drilling and production. Only those cases where temperatures have an influence from an economical standpoint and how these effects are dealt with scientifically are discussed.

Because of its length the report is divided into two parts for publication. Part 1, presented herewith, discusses temperatures affecting oil well drilling. Part 2, to be published next week, describes temperatures affecting crude oil production and discusses the geothermal gradient present in Gulf Coast oil fields.

The complete report was presented under the title, "Temperatures as Affecting Oil Well Drilling and Production." It was delivered at the Symposium on Temperature of the American Institute of Physics, held in New York City in early November. A fairly full report of the temperature symposium, including this and other papers that were presented, is to be published in book form by the Institute.

(4) Cementing Operation in Rotary Drilling

Only until recently have high bottom-hole temperatures seriously impaired cementing operations. With shallow wells, the ordinary oil-well cement was entirely satisfactory and until as late as 1936, there was no need for an especially prepared slow-setting oil-well cement. When drilling depths increased to below 6000 feet, the bottom-hole temperatures of 150° F. to 170° F. that were encountered rapidly increased the setting time of ordinary cement. This fact, together with the additional delay in pumping cement through 6000 feet or 7000 feet of casing has been directly responsible in several cases for the cement setting inside the casing and becoming immovable before only a small part had passed out through the casing shoe, thereby improperly cementing the hole and causing unnecessary delay in drilling out several hundreds of feet of cement in the casing.

As an actual early example where temperature, in the process of cementing a hole, caused the operators considerable trouble was in July, 1936, where 2000 sacks of straight portland cement were mixed and pumped into a string of 7-inch casing 10,900 feet deep. The plug was put in and pressure applied; the cement moved down 3000 feet at which point it was impossible to move farther. This left 7900 feet of cement in the pipe and very little on the outside. The gradual rise in pressure up to the point where the cement became immovable proved beyond doubt that the high bottom-hole temperature caused the premature setting of the cement.[4]

The increase in bottom-hole temperature as wells were drilled deeper made it imperative that improved cements be developed.[5] Bottom-hole pressures up to 5700 pounds and bottom-hole temperatures as high as 335° F. have been encountered in deep well cementing operations.[6] To meet this condition, a cement now has been made available to the oil industry that will remain pumpable at temperatures higher than 212° F. and will remain in a movable state at these temperatures for more than 2 hours.[7] As a typical example, with a bottom-hole temperature of approximately 250° F., there have been no cement failures reported for any of the wells completed in the California Wasco field where production is obtained from a 13,200-foot horizon. In 1936, the success of Gulf Oil Corporation's McElroy 103 well in West Texas in reaching a record depth of 12,786 feet was partly due to the comparatively low bottom-hole temperature of 182° F.[8] Not only does the high earth temperature increase the setting time of cement, but investigations by Jessen & Webber[5] show that the heat of hydration of a 40 percent slurry (ordinary oil well cement mixture) reaches a maximum temperature of 150° F.

(a) *Location of Cement Behind Casing by Temperature Measurements.*

In the interpretation of the data obtained by electrical temperature surveys, the assumption must be made either that the fluid in the well and the surrounding area is in thermal equilibrium, or that the fluid in the well and the surrounding area is not in complete thermal equilibrium. The following discussion dealing with the location of cement, gas-oil and water flows and the correlation of drill holes will more clearly explain the necessity of these two apparently contradicting assumptions.

Casing in oil wells is cemented for various reasons, the principal one being to effectively seal off upper sands to prevent the intrusion of water from formations above the oil zone. The amount of cement required is calculated theoretically as a function of the size of the casing, the size of the hole and the height outside the casing the cement is expected to reach. But the hole may be far from regular, some porous sands may absorb the slurry and channelling may also occur. Thus the exact location of the cement

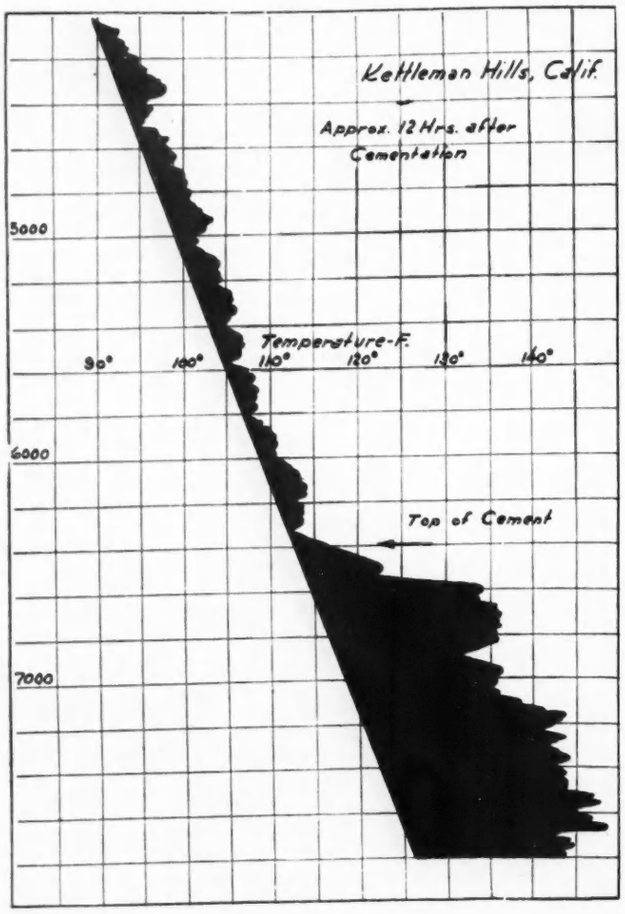


FIGURE 1

Temperature survey record of a 78-foot well at Kettleman Hills to determine top of cement.

survey in a 7800-foot well in Kettleman Hills, California, to determine the top of the cement. The run was made 12 hours after cementation and the sharp increase in temperature at 6350 feet clearly indicates the top of the cement outside the casing.

It is possible, although at present there are no actual cases on record, that in a deep well below 12,000 feet where the earth temperature is greater than the heat of hydration of the setting cement, the temperaure curve would tend to show a decrease at the top of the cement rather than a sharp increase.[9] This is entirely possible since it is known that below 12,000 feet bottom-hole temperatures as high as 250° F. exist while the heat of hydration of the cement slurry is only 150° F. Thus far, the nearest approach theoretically to this condition is illustrated in Figure 2.[9] The well is more than 8700 feet deep. Casing was set at this depth and cemented with 350 sacks of cement. In addition, another 350 sacks of cement were squeezed through perforations at 6635 feet. The cement mixture was made using 10 tons of ice as a cooling medium, the final temperature being 40° F. The sharp negative anomaly below 4400 feet was, in the opinion of the persons in charge of the temperature survey, due to the presence of the cool

is of prime importance when there is any doubt as to the success of the cementing operation.

The principal of the temperature surveys is based, not on earth temperature, but on temperature from the heat of hydration during the setting process of the cement, assuming that the fluid in the hole and the surrounding area is not in thermal equilibrium but only the area immediately in contact with the casing. Temperature surveys of deep wells are made from a power hoist mounted on a heavy-duty truck and with sufficient cable to make a 15,000-foot survey. The instrument itself consists of a resistance thermometer with a surface recorder giving a continuous record of temperature changes as the instrument is lowered into the hole.

Temperature surveys to determine the location of cement behind casing are best made within 24 hours after the cementing process. This will allow ample time for the fluid in the hole to reach a state of thermal equilibrium with the setting cement and also prevent the heat of hydration from being absorbed by the formations. Figure 1 is a record[9,10] of an actual

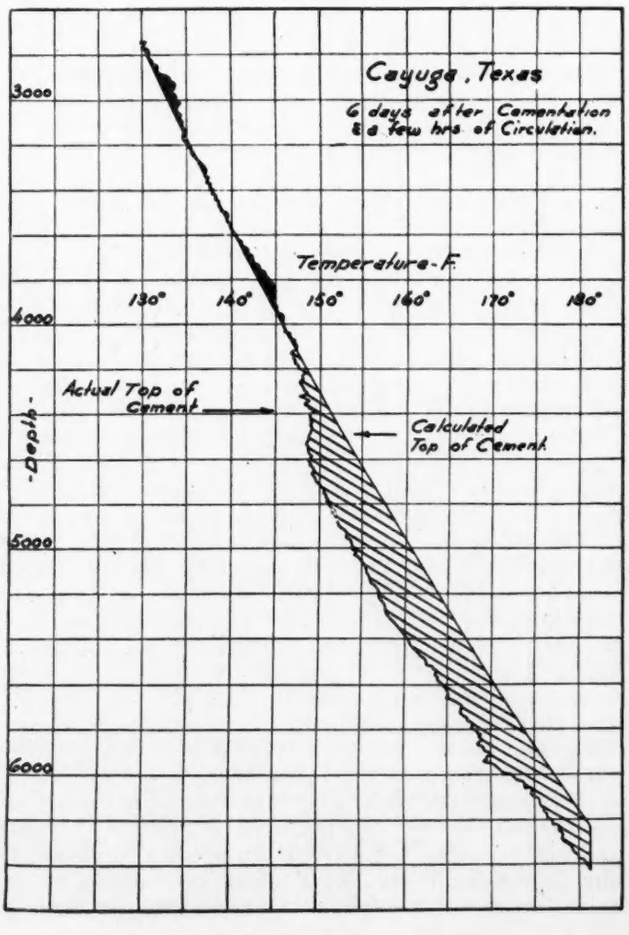
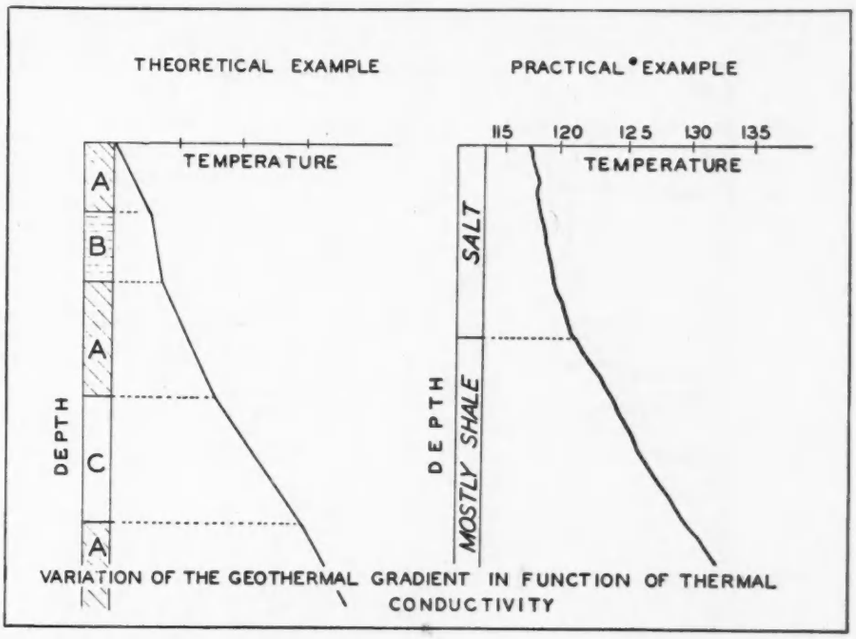


FIGURE 2

Temperature curve showing a sharp negative anomaly below 4400 feet, which is probably due to the presence of cool cement below that level. This is a situation that may be encountered in 12,000-foot wells, where the earth temperature is greater than the heat of hydration of the setting cement.

FIGURES 3 AND 3A

Show a theoretical and practical example of the variation of the geothermal gradient in function of thermal conductivity, which should be closely related to the succession of formations encountered, thus marking important stratigraphic changes.



cement below that level, not having completely reached a state of thermal equilibrium with the surrounding area.

(5) Electrical Temperature Logging with Survey Instruments.

In the discussion of the location of water and gas-oil flows and the correlation of drill holes by recording subsurface temperatures, it is of interest to first consider the progress and development that have been made in the investigation of the temperature anomaly existing in oil wells at great depths. Full credit for evolving a suitable method and operating technique as well as for designing the practical apparatus which has made the thermometric measurements possible should go to Messrs. C. and M. Schlumberger and H. G. Doll.[11] The first instruments used in measuring temperature in oil wells and mine shafts consisted of a series of thermometers attached at intervals along a cord and lowered in the hole. These thermometers would be withdrawn at periodic intervals and readings made to determine the temperature changes. Another early instrument was commonly known as a "single-shot"; simply a single thermometer lowered to a desired depth, allowed to remain until a state of thermal equilibrium is reached and then withdrawn. Thus we see that extensive measurements were hampered by the lack of a suitable and practical instrument and consequently of an adequate operating technique. Such an instrument has now been evolved and has been in actual field service for the last few years, whereby the maximum amount of data can be had by tracing a continuous temperature log over the entire depth of the hole in a sufficiently short time. This instrument is based on the well-known phenomenon of the variation of the electrical resistance of a conductor as a function of its temperature. The Wheatstone bridge principle can be used and it will readily be understood that a potential difference measurement can be substituted for that of the resistance, and correlated to give temperature readings. The accuracy of this method is 0.2° F. and the "time constant" is such that continuous logs can be traced at the satisfactory speed of approximately 2000 feet per hour without any appreciable lag.[12]

(a) *Correlation in Drill Holes by Means of Sub-Surface Temperatures.*

"To some extent, the logging of geological strata traversed by a drill hole is feasible by means of temperature measurements. Because of the high thermic conductivity and thermic capacity of the fresh water and salt water bearing sands, the rate of exchange of heat between the mud or fluid in the hole and the formations, after circulation has been stopped, is much larger opposite these sands than opposite shales."[9] Thus a temperature curve made a few hours after circulation has ceased, should therefore show temperature changes at each formational contact. In the earth's crust, thermic conductivity varies with the nature of the rocks. For instance, a dry sand will have a conductivity of 3.10^{-4}. This means that it transmits 3/10,000 of a caloric gram per second and per square centimeter. For oil, the same conductivity is also 3.10^{-4}. For water, the variation is from 14.10^{-4}, limestone, 52.10^{-4} and 66.10^{-4}, or more for rock salt.[11] Thus it can be seen that the variation of the geothermic gradient will be closely related to the succession of rocks encountered, and will mark the important stratigraphic changes. Figure 3 illustrates[12] this condition theoretically and Figure 3-A is a practical illustration[12] of this example.

Figure 4 is an example[15] of correlation between three wells at Rodessa, Louisiana. Although it is quite evident that temperature measurements in oil wells are far from being capable of giving the accurate and complete information which the electrical resistivity and porosity logs now give in correlation work, the three examples illustrated in the diagram show that in some cases such measurements can be used to correlate wells already cased, where no other method of investigation is possible. Although the example in Figure 4 shows strikingly the different formations traversed by the hole, the problem of logging formations by temperature measurements has proved difficult in many cases. In fact, many temperature curves show abnormalities which seem to be

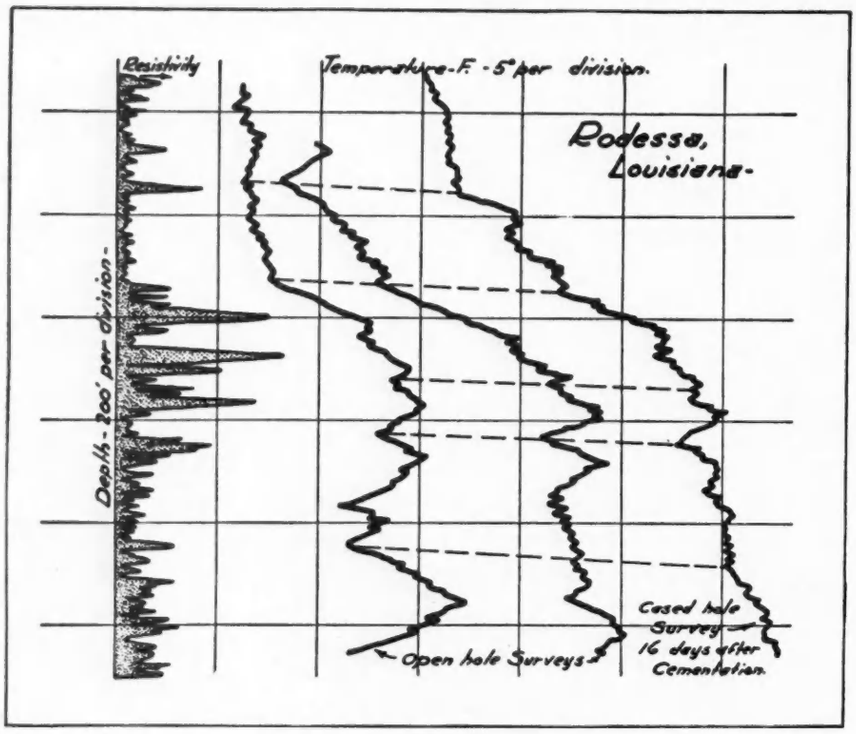

Resistivity
Temperature-F. - 5° per division.
Rodessa, Louisiana-
Depth - 100' per division -
Cased hole Survey — 16 days after Cementation.
Open hole Surveys

FIGURE 4

Correlation of surveys made in three Rodessa wells, two of which had open holes and the third had been cased.

without apparent relation to the stratigraphy of the formations.[9] Also, many geological markers, or "tops," although definitely revealed by the electrical porosity logs, do not appear clearly on the temperature curves. However, it is expected that, in the future, as improvements are made and more knowledge is gained by work with temperature survey, considerable more information will be made available by these measurements and investigations.

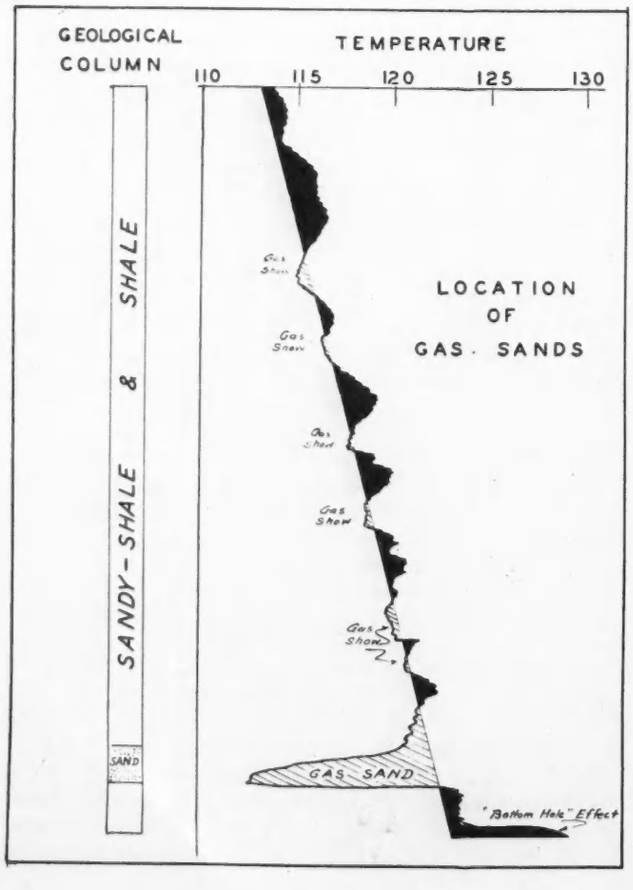


FIGURE 5

Location of gas sands by means of temperature surveys.

(b) *Location of Gas-Oil and Water Flows.*

The location of gas-oil and water flows by a temperature survey is not based solely on the natural convection movements. Here is an example where the assumption, that the fluid in the hole and the immediately surrounding area is in thermal equilibrium, is of importance. If the sands are being produced in neighboring wells, or if they are being produced in the well under investigation, they will be cooler than the formations above and below because of gas expansion, or as the case may be, warmer in the event of water movement.

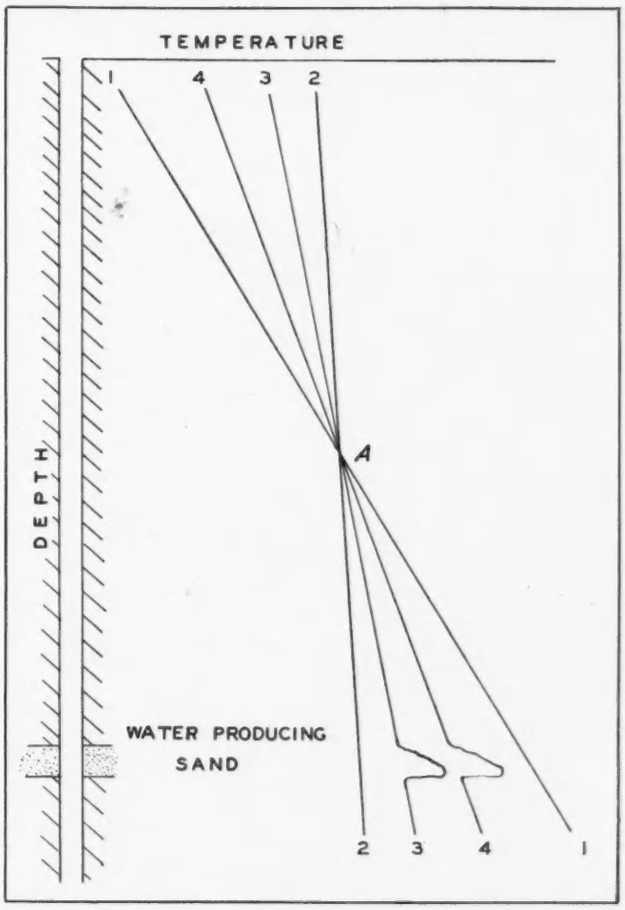
As shown in Figure 5, a temperature[12] survey will accurately locate a gas-oil bearing formation. The gas, together with oil, bubbling out of the hole during drilling, or being produced if a production test is made, will cool off the formation at the point where it enters the hole, the cooling effect being due, of course, to the expansion of the gas upon entering a region of reduced pressure.

(c) *Economic Importance of Temperature Measurements.*

A practical example of the economic importance of accurately locating gas and water flows is illustrated in Figures 6 and 6-A.[12] The first example concerns the location of intruding water after casing had been cemented at the point "A." From the results of the temperature survey, the well was plugged to the point "B," reducing the water cut to less than 1

FIGURE 7

Theoretical temperature surveys made at different periods of time to determine the point of entry of a water flow.

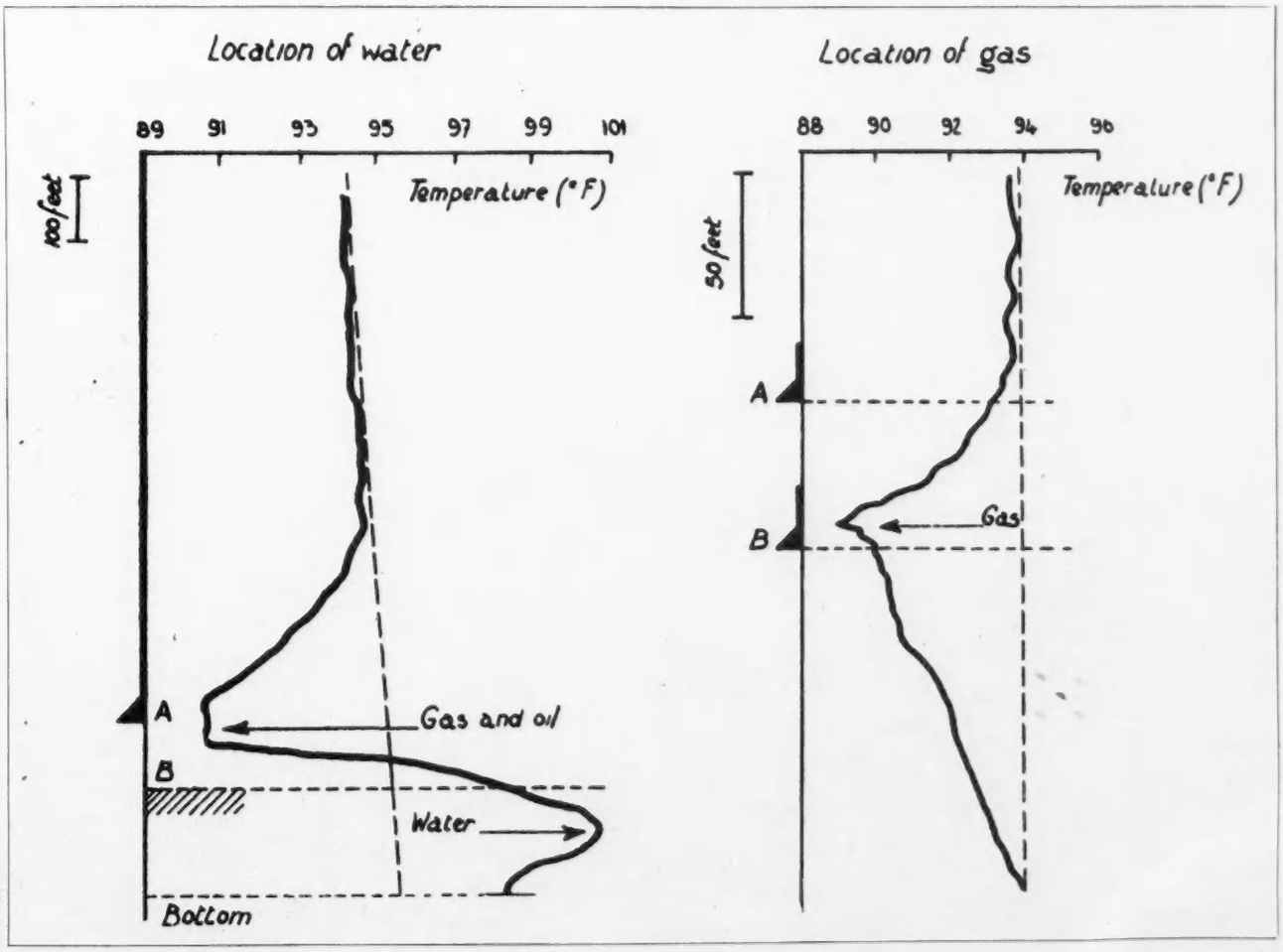


percent. The second example, Figure 6-A, refers to the location or determination of gas entering in a cased hole. This well was completed with casing set at the point "A" and allowed to produce by natural flow for a period of two months. From the very beginning, the gas/oil ratio was already high, but, as production continued the gas/oil ratio increased even higher. The decrease in temperature, as shown on the temperature curve, clearly indicates the point at which gas is entering the well and the persistence of the low temperature below the obvious point of greatest entry, even suggests that some gas may have passed downward and was gradually excluding the flow of oil. Following the temperature survey, an insert liner was cemented at the point "B" and the well was again completed as a good producer with a low gas/oil ratio.

To define the point of entry of a water flow into the hole requires considerably more time and effort than to locate the entry of gas/oil flows. In Figure 7,[13] let us suppose that the well to be examined is filled with water or mud and that it has been kept idle for several days. A survey (first run) of the hole will

FIGURES 6 AND 6A

Examples of the use of temperature surveys to locate water and gas bearing formations.



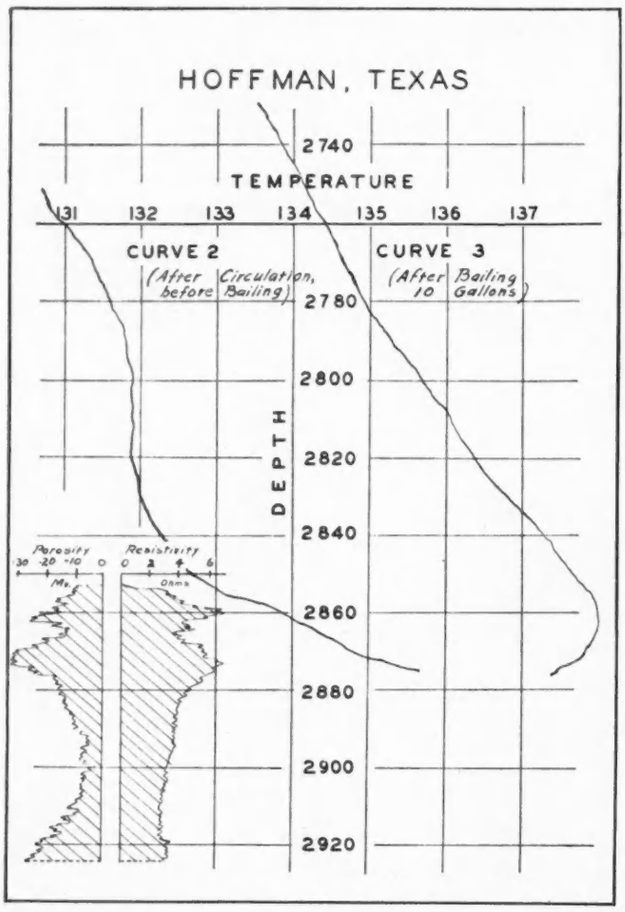


FIGURE 8

Actual example of temperature surveys made at different periods of time. Note the conformation with resistivity and porosity diagrams in lower left hand corner.

give a temperature curve in terms of depth which will show approximately the geothermal gradient of the formations (Curve 1). If the mud is then circulated a few hours, the equilibrium of temperature between the mud and the formations will be destroyed. a temperature survey (second run) made after this circulation will give a similar curve (2) crossing curve (1) at point "A." Let us suppose now that the water to be located comes from the lower part of the hole. If, after the second run, the hydrostatic level of the well is decreased (for instance, by bailing a certain quantity of fluid) in order to produce a small flow of water into the hole which has about the same temperature as the formation from which it comes, will be warmer than the fluid which it has displaced in the hole. A temperature survey (third run) made immediately after bailing will give a curve similar to curve (3), showing a peak at the level at which water is entering the well; curve 4 is a survey to check curve 3.

Referring[13] to Figure 8 for an actual example, the curves (2) and (3) correspond to the second and third runs described above. They indicate that the water is coming from 2856 feet to 2866 feet. This interpretation conforms, by the way, with the results of the resistivity and porosity diagrams which are also plotted on the figure.

Of course, the thermometric technique of solving water flow problems is a quite recent development and can be improved after a large number of surveys have been made under various conditions. Nevertheless, the writer feels that the results already obtained are more than encouraging and of sufficient interest to be included in this report.

This discussion of temperatures as affecting oil field operations will be continued next week, when crude oil production phases and the geothermal gradient present in the Gulf Coast area are considered.

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[13] "Location of Water Flows in Drill Holes by Temperature Measurements," by H. Guyod, Houston, Texas, 1936, Oil Weekly, June 29, 1936.

ACKNOWLEDGMENTS FOR ILLUSTRATIONS

Figure 1—Reproduction of Figure 1, pp. 793 in Vol. 21, Bulletin No. 6 of the American Association of Petroleum Geologists, "Use of Temperature Measurements for Cementation Control and Correlations in Drill Holes," by Alexander Deussen and Hubert Guyod.

Figure 2—Reproduction of Figure 6, pp. 799, Vol. 21, No. 6, Bulletin of American Association of Petroleum Geologists, "Use of Temperature Measurements for Cementation Control and Correlations in Drill Holes," by Alexander Deussen and Hubert Guyod.

Figure 3 and 3-A—Reproduction of Figure 1, pp. 3, "Temperature Measurements in Oil Wells," by M. Schlumberger, H. G. Doll and A. A. Perebinossoff, Institution of Petroleum Technologists.

Figure 4—Reproduction of Figure No. 11, pp. 805 in Vol. 21, No. 6, Bulletin of American Association of Petroleum Geologists, "Use of Temperature Measurements for Cementation Control and Correlations in Drill Holes," by Alexander Deussen and Hubert Guyod.

Figure 5—Reproduction of Figure 3, pp. 8, "Temperature Measurements in Oil Wells," by M. Schlumberger, H. G. Doll and A. A. Perebinossoff.

Figure 6 and 6-A—Reproduction of Figure 5, pp. 11, "Temperature Measurements in Oil Wells," 1936, by M. Schlumberger, H. G. Doll and A. A. Perebinossoff, Institution of Petroleum Technologists.

Figure 7—Reproduction of Figure 2 in a reprint from The Oil Weekly June 29, 1936, "Location of Water Flows in Drill Holes by Temperature Measurements," by H. Guyod, Houston, Texas.

Figure 8—Reproduction of Figure 3 in a reprint from the Oil Weekly June 29, 1936, "Location of Water Flows in Drill Holes by Temperature Measurements," by H. Guyod, Houston, Texas.

Pumping Series Article No. 30

Effect of Reducing Pump Submergence

By M. L. MAYFIELD, Cities Service Oil Company

THE question of pumping wells in the East Texas field has, in the past, on two occasions, been discussed before the Chapter. First, Mr. George L. Nye and Mr. E. B. Miller, Jr., prepared and delivered in May, 1937, a paper entitled "The Present and Future of Pumping in the East Texas Field," which showed the physical characteristics of the field are such that for the purpose of discussion, the field divides itself into three major parts: The East Side, the Middle or Fairway, and the West Side; second, Mr. Robert M. Bass, in October, 1939, prepared a paper entitled "Observation of Pumping Problems and Equipment in the East Texas Field," which discussed the operating problems and the equipment by sections of the field.

This paper has been prepared from data obtained on Cities Service Oil Company west side wells only and the results indicated hereinafter would not apply except to West Side properties.

For some time the dynamometer load readings recorded the tendency of west side pumping wells to flow intermittently while being serviced, and the high volumetric efficiencies of practically all them, gave reason to believe that high working fluid levels were the rule rather than the exception. From bottom-hole pressure information on west side wells, it has been well established that the static fluid levels have been well maintained, and this fact, together with their original capacity for producing large volumes of oil indicated that under proration restrictions and the slower producing rates, in either natural or artificial lift, that these high levels could be utilized for decreasing the pump submergence.

A number of tests which included fluid level determinations, dynamometer recordings, both surface and subsurface, were made on typical west side pumping wells to determine the well loads and power requirements under conventional pumping from bottom as compared to decreasing the pump submergence. Fluid level determinations were made on 22 individual wells on five different leases and dynamometer recordings on four wells under conventional and various pump submergence. The amount of horsepower required under the conventional and decreased submergence pumping is included, also.

This study is intended to offer evidence that polish rod loads and horsepower requirements can be reduced materially without sacrificing production, if the individual well analysis indicates a high working fluid level, good sand permeability and productivity index is existent which will permit the successful application of the pumping principle described.

M. L. MAYFIELD

The accompanying paper was presented to the East Texas Chapter, American Petroleum Institute, at Kilgore, Texas, on December 12, 1939, under the title "Pumping Up-the-Hole, or Effect of Reducing Pumping Submergence in West Side Wells of East Texas."

Definitions[a]

For the purpose of clarifying terms[2] used in this paper the terminology is based on accepted concepts of well performance and interpretations. However, for better application to pumping wells all fluid levels observed will be referred to the well casing head.

Static Fluid Level is the point below the casing head at which the top of the fluid column stands under equilibrium conditions, i.e., the well is shut in and the pressure due to the column of fluid plus the casing head pressure equals the bottom-hole pressure in the sand.

Working Fluid Level is the point at which the top of the fluid column stands in the annulus during the settled producing rates, whether pumping, gas lifting or flowing, and in most West Side wells remains high under the slower producing rates.

Draw Down is the distance the fluid column drops from the static level under various producing rates or the static fluid level minus the

[a] References are at the end of the paper.

working fluid level would equal the amount of draw down.

Effective Lift is the vertical distance from the well head to the working level and is that distance to which artificial methods must be employed in conjunction with the natural energy to raise the fluid to the point of discharge after the well stops flowing.

Pump Submergence is the vertical distance, in feet, between the working fluid level and the location of the well pump. This distance depends upon the productivity index of the individual well, the rate of withdrawal under artificial flow, and the placement of the working barrel.

Productivity Index[1] is defined as the barrels per day of gross fluid produced per pound per square inch pressure drop at a specified subsurface datum. In the majority of normal west side wells, that is, where no remedial or plug back work has been performed, this factor is usually high, meaning that the formation permeability, pressure, and penetration is of sufficient magnitude to permit withdrawal rates in the range of ten to forty barrels per hour without causing much of a draw down.

The above information is essential for applying the principle of reducing the pump submergence and should be obtained by use of the recording pressure gauge, or by sonic wave determination. These data can then be analyzed, and from the definite and inferred results, conclusions pertinent to the well tested will enable an operator to design or purchase the suitable producing equipment.

Determination of Loads

In January, 1939, permission was granted by the Texas Railroad Commission to conduct tests on a typical West Side well and the initial well was equipped as shown in Figure 1. Since there is a Railroad Commission rule requiring each well to be tubed to the top of the Woodbine Sand with the pump perforations opposite or near the formation, the only essential change was to move the working barrel and pump up-the-hole with the well still being tubed to bottom. The first two wells tested were jack equipped, pumping 16 hours per producing day at twenty 50-inch strokes per minute producing a large quantity of water. A summary of dynamometer tests taken on these two wells is shown in Table 1, which indicates the removal of 2035 and 2075 feet of ¾-inch rods respectively, would enable the well to be produced with approximately five (5) Polish Rod Horsepower with a maximum load of 7300 pounds. Previous load tests are shown also, but because of the time interval between readings the comparison is not very good as the initial readings were taken in the early pumping life of these wells while water production was small, and the decreased submergence taken while water production was large. Results of these preliminary tests were satisfactory except for volume requirements which may be expected when the well is approaching depletion; therefore, a nearly depleted average fluid level well on the same lease was chosen for installing a unit capable of producing what is thought to be a maximum average fluid withdrawal. It is believed a volume in the range of 500 to 600 barrels of fluid per day would be a maximum average fluid withdrawal rate under the present proration restrictions.

The well chosen was located in the Gladewater Townsite area and was equipped as follows:

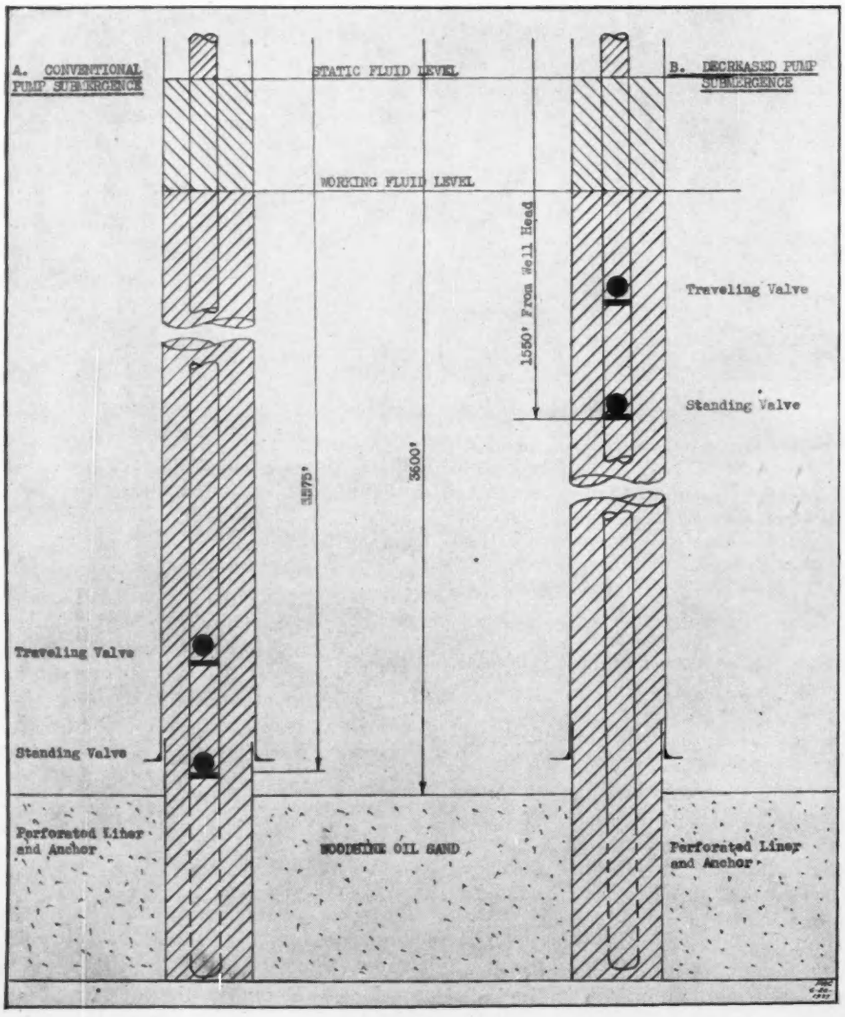


FIGURE 1

Diagram showing change of pump location from conventional method

Prime Mover:

The prime mover used to drive the 10-horsepower pumping unit was a four-cylinder 116 cubic inch displacement, water-cooled, natural gas engine having a 3¼-inch x 3½-inch stroke and bore. The engine, under continuous service develops 15 horsepower at a normal speed of 1400 r.p.m. The engine is one of the smallest obtainable for pumping application and has proved to have an adequate power output and speed range for flexibility and suitable application for the small 10-horsepower pumping unit.

The Pumping Unit:

The pumping unit was a 10-horsepower, 10,000-pound polish rod load capacity, double-reduction speed re-

TABLE 1

Summary of Dynamometer Test, Cities Service Oil Company's J. T. Jeter Lease, Conventional Setting and Decrease

LEASE	Date	Pump Depth, Feet	Pol. Rod Stroke Inches	Stroke per Minute	DYNAMOMETER READINGS Max. Load Lbs.	Min. Load Lbs.	Range Lbs.	Pol. Rod H.P.
J. T. Jeter No. 4....	1-19-38	3535	48½	20	8210	7075	6460	5.99
	11-30-38	3535	48½	20.7	8760	3785	4975	7.57
	11-30-38	3535	48½	21	8535	3710	4825	8.00
	2-21-39	1500	48½	17.5	6900	1040	5860	5.05
	2-21-39	1500	48½	20.5	7010	520	6490	5.85
J. T. Jeter No 7....	1-19-38	3575	48½	20	7840	1570	6270	5.6
	11-30-38	3575	48½	21	9575	4080	5495	8.94
	2-21-39	1500	48½	16.5	6243	2000	4240	3.75
	2-21-39	1500	48½	20	7460	2040	5420	5.13
	2-21-39	1500	48½	20	7310	2340	4970	5.13

LEASE	S.P.M.	3600 Ft. Depth Max. Load Lbs.	3600 Ft. Depth Pol. Rod H.P.	1500 Ft. Depth Max. Load Lbs.	1500 Ft. Depth Pol. Rod H.P.	Reduction Max. Load Lbs.	Reduction Pol. Rod H.P.
J. T. Jeter No. 4....	20	8210	5.99	7010	5.85	1200	.14
	20.7	8760	7.57	....	....	....	....
J. T. Jeter No. 7....	20	7840	5.6	7460	5.13	380	.47

ducer of 50,000 inch pound peak torque rating. This unit was on extended steel skids, twin pitman and rotary balanced cranks. Normal stroke obtainable is 18 inches, 24 inches and 36 inches; however, multiplication was used by moving the walking beam which gave a maximum stroke of 41 inches at the polish rod.

Subsurface Equipment:

The sub-surface equipment consisted of 2½-inch upset tubing, common 2½-inch working barrel with 2¼-inch cup and ring packer plunger, and 1500 feet of ¾-inch rods. This change in decreasing the pump submergence is illustrated by Figure 1.

Production tests, well loads, and performance was observed both before the change in working position, i.e., at 3600 feet, and after the working position was at 1500 feet and 1075 feet.

Results of the test when operating at various speeds and depths are summarized in Table 2 and a curve drawn illustrates the polish rod horsepower required under these conditions (Curve 1). In a test taken June 3, 1938, with a full string of rods, 20 strokes per minute and 50-inch stroke on the jack, it was observed that the maximum polish rod load was 8660 pounds, with a load range of 6270 pounds as compared to 6000 pounds maximum polish rod load, range load 5700 pounds at twenty 41-inch strokes per minute, on April 6, 1939, with 1500 feet of ¾-inch rods. This is a reduction of the maximum load in the amount of 2390 pounds or 27.5 percent.

Further along these lines in an effort to have a rod string weight which would be comparable to 1500 feet of ⅝-inch rods, the pump submergence was decreased to 1075 feet of ¾-inch rods. This further reduced the maximum polish rod load to 4115 pounds, range of 3658 pounds, which is a reduction of 4545 pounds or 52 percent as compared to the conventional method.

Determination of Working Level

The bottom-hole recording pressure gauge can be used in flowing wells to advantage in determining the working level at different rates of production[1], however, if used in pumping wells necessitates pulling the rods, and at times even the tubing, in order to lower the instrument into the well. This requires considerable time, delay, and expense which can be eliminated by using an instrument of sonic or wave-reflection principle. This device which was used on 18 Cities Service wells employs a gun cartridge for initiating the pressure or sound wave and a microphone for wave detection on a constant speed recording system.[4, 5, 6, 11]

The summary of fluid level determinations on 21 wells located on five different West Side leases whose location range from the Gladewater area south to Kilgore indicate these two methods are workable. Three of the wells were still producing naturally, the remaining wells being pumped at normal production rates or shut in as the data shows.

Table 3 is a summary of this in-

TABLE 2

Summary of Dynamometer Test, Cities Service Oil Company's J. T. Jeter Lease, Decreased Submergence

WELL No.	Date	Pump Depth, Feet	Polish Rod Stroke Inches	Strokes per Minute	Max. Load Lbs.	DYNAMOMETER READING Min. Load Lbs.	Range Lbs.	Polish Rod H. P.	[1]Calc. Prod. Rate B.P.H.	[2]Calc. Peak Polish Rod Load Lbs.
J. T. Jeter No. 13.....	*4- 3-39	1527	41"	18.7	5750	700	5050	4.22	18.86	5500
	†4- 6-39	1527	41"	21.0	6000	300	5700	4.9	21.17	5575
	*4- 3-39	1527	41"	22.0	6060	600	5460	5.4	22.18	5625
	†4- 6-39	1527	41"	24.4	6500	700	5800	5.73	24.59	5700
	†4- 6-39	1527	41"	26.4	6700	600	6100	6.11	26.61	5775
	*4- 3-39	1527	41"	27.1	6600	400	6200	7.88	27.31	5800
	†4- 6-39	1527	41"	28.0	7300	700	6600	7.56	28.23	5830
	*4- 3-39	1527	41"	28.0	7100	500	6600	7.52	28.23	5830
	†4- 6-39	1527	41"	29.5	7300	700	6700	8.3	29.75	5880
	†4- 6-39	1527	41"	31.5	7300	300	7000	9.45	31.52	5960
	*4- 3-39	1527	41"	32.0	7640	0	7640	9.36	32.26	5975
J. T. Jeter No. 13.....	‡4-27-39	1075	41"	20.5	4115	457	3658	3.56	20.65	3910
	4-26-39	1075	41"	24.0	5373	230	5143	5.18	24.20	4000
	4-26-39	1075	41"	29.5	5830	343	5487	6.98	29.75	4150

* Dynograph Read by Lufkin. † Kemler—Gulf by National Supply. ‡ Dynograph Read by Humble.
[1] Assumes Plunger Travel same as Polish Rod, 100% Vol. Efficiency. [2] Slonnegers Formula—A.P.I. Spec. 11-E.

formation and a chart (Curve 2) has been prepared to graphically demonstrate the various static and working fluid levels obtained. The wells are produced under normal or maximum rates anticipated, as equipment or conditions permit, and the working fluid levels determined. Four wells dropped to a level between 1000 feet and 1720 feet from the well head, three wells went 2000 feet below the well head while the remaining 13 wells have working fluid levels less than a thousand feet from the well head. Of the wells tested, eight have been plugged back by either a squeeze or semi-squeeze method, and four of these wells indicated the working fluid level has been decreased to some extent. Apparently this remedial work, where effective, causes an appreciable decrease in the sand permeability which is reflected by the change in productivity index and the working fluid levels. It is reasonable to assume that a successful plug back campaign would preclude the possibility for high working fluid levels, which obviously would eliminate the application of small pumping units to the wells remedied in that the effective lift would be increased such that the torque rating of the reducer would be exceeded.

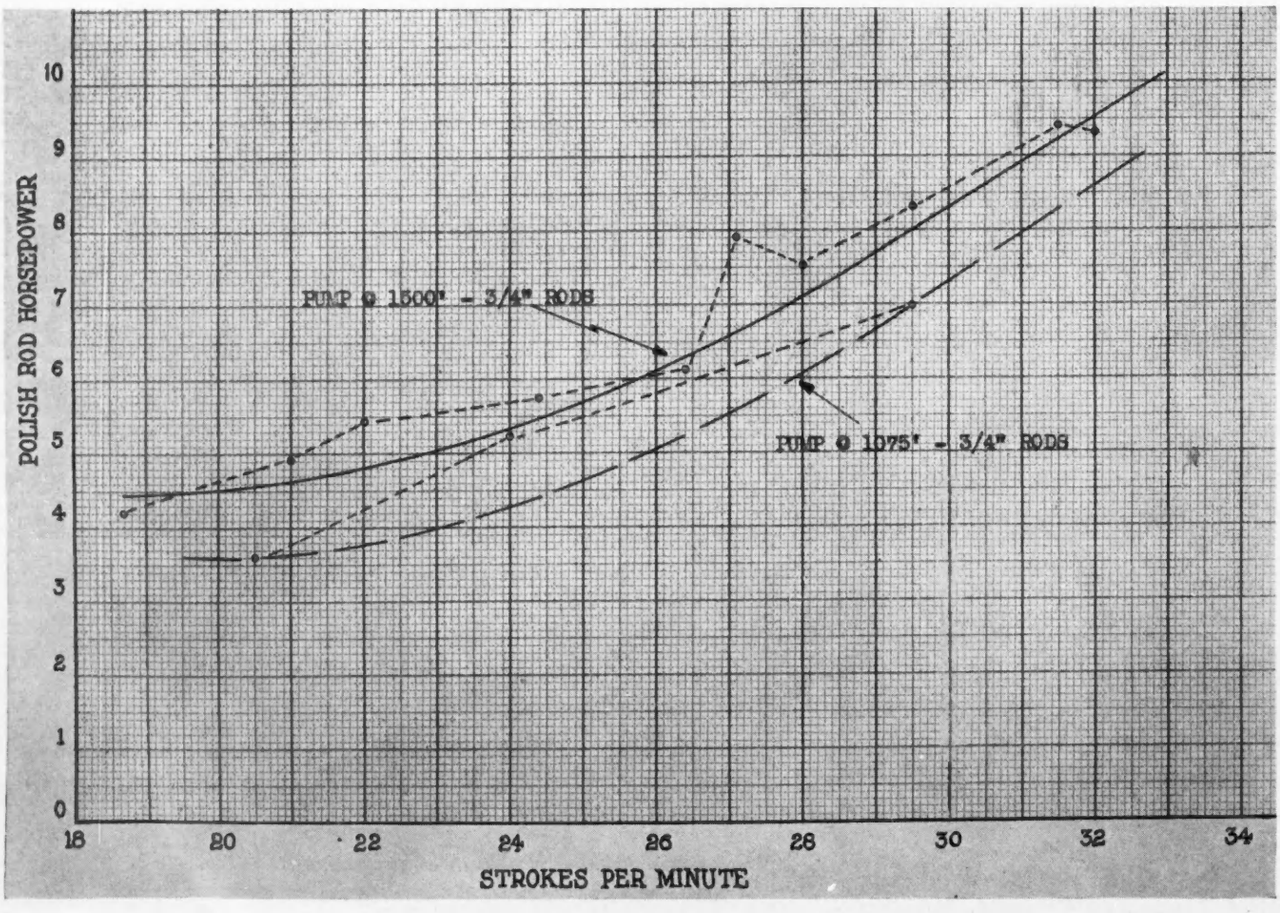
The importance of determining the working fluid levels cannot be over stressed as the entire application is predicated on the basis that the rate of water encroachment is swifter than is the decline in bottom-hole pressure, i.e., the decline in the working fluid level is experienced but before the level drops below the point where the unit rating would be exceeded the water has increased to such an extent that the well is depleted and will be abandoned.

A history of fluid levels and bottom-hole pressure for the five leases is tabulated in Table 4, and these data tend to illustrate this effect in that the static fluid level is declining at a rate of 45.6 feet per year, the static bottom-hole pressure at minus 3300 feet dropping 47.64 pounds per year. Present history indicates that wells situated along the West Side, which has a relatively small oil saturated sand section, are in the majority of cases abandoned from two to five years after first producing water.

Placing the working barrel 1500 to 2000 feet from the casing head has to date been very satisfactory. For example, three wells on the V. L. Taylor lease (No. 6, 8 and 9) had a high static fluid level, ranging from 179 feet to 713 feet draw-down. During the test for fluid levels these wells were normally produced pumping 7½ hours. The capacity of the annular, when 2½-inch tubing is in 7-inch casing is 3.96 barrels per 100 feet, which on wells No. 6 and No. 9 meant only 11.5 barrels and 7.5 barrels respectively had been taken from the annulus. On well No. 8, which lowered 713 feet, a total of 28 barrels was produced from the annulus. Under present well allowables and until the pumping well is producing in excess of 50 percent water, assuming the permeability is very low, which means the draw-down is appreciable, sufficient volume of fluid is stored in the annulus to provide the daily well allowable.

Pump Dynagraph

Most recent of the important well testing instruments is the pump dynagraph,[7, 8, 9, 10, 11, 12] which records plunger movements and variations in plunger load. This instrument was in-

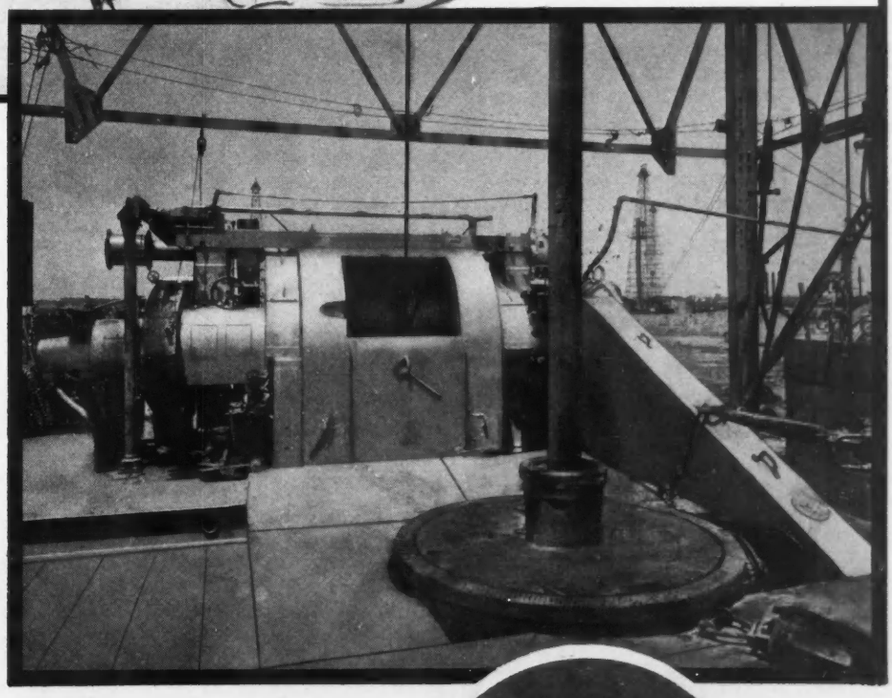


CURVE 1

Showing polish rod horsepower required for decreased pump submergence

"Oh, bury me DEEP in the lone prair-rie"

Ideco Big Giant draw works, reinforced with Nickel in all vital parts, drilling deep in a Texas field.



FROM deeper and deeper wells comes Texas and Gulf Coast production. With more wells passing the 10,000 ft. mark, drilling equipment must be engineered to rotate, hoist and control strings of tools nearly three miles long.

Ideco Big Giant draw works are designed by the International Derrick and Equipment Co., Beaumont, for 25,000 ft. levels. To withstand stresses, shock loads and abrasive wear inescapable in deep drilling, all Ideco cast steel parts are Nickel-chromium, similar to SAE 3140. Sprockets, clutches, drums and bearing boxes fabricated from this 1.25-1.75% Nickel steel are normalized and tempered to a tensile strength of 110,000 p.s.i.

Ideco draw works shafting is forged from Nickel-chromium steel. High carbon Nickel-molybdenum steel is used for brake bands. The high elastic limit Nickel steel bands instantly hold plunging tons of tools without deformation or change in shape. To save money, to avoid shut-downs, specify extra strong, extra tough Nickel alloys for new and replacement parts.

ALLOY NICKEL STEELS

THE INTERNATIONAL NICKEL COMPANY, INC., 67 WALL ST., NEW YORK, N. Y.

TABLE 3

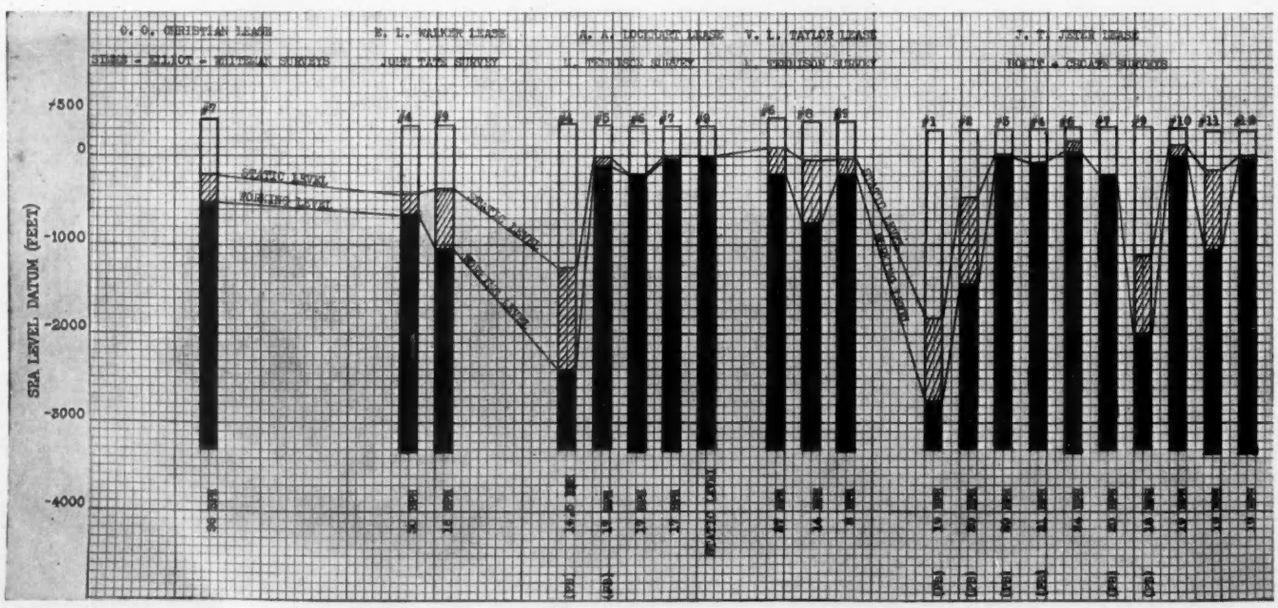
Summary of Fluid Level Determinations, Cities Service Oil Company East Texas Leases, as of December 1, 1939

LEASE	Well No.	Size of Tubing	Duration of Producing Time	Casing Pressure P.S.I.	Fluid Level Draw Down Feet	Observed Static Fluid Level	Observed Working Fluid Level	‡Est. Prod. Rate Bbls./ Hour	Estimated Percentage Produced		Method Used	How Produced
									Water	Oil		
A. A. Lockhart (M. Tennison Survey)	4	2½"	4:35 Min.	3–5	1140	1630	2770	*14 57	16	84	Sonic Wave	Pump
	5	2½"	5:30 Min.	0	116	356	472	17.20	26	74	Sonic Wave	Pump
	6	2½"	1:27 Min.	77–82	2	566	564	17.20	15	85	Sonic Wave	Pump
	7	2½"	4:30 Min.	0–10	30	343	373	17.20	24	76	Sonic Wave	Pump
	†9	2"	.....	6	....	313	....	.....	5	95	Sonic Wave	Shut in
V. L. Taylor (Tennison Survey)	†6	2½"	7:30 Min.	0–6	290	343	633	*26.9	16	84	Sonic Wave	Pump
	8	2½"	7:30 Min.	12–7	713	447	1160	13.77	43	57	Sonic Wave	Pump
	9	2"	7:30 Min.	22–9	179	416	595	8.33	33	67	Sonic Wave	Pump
J. T. Jeter (Hokit-Choate Survey)	1	2½"	7:45 Min.	115–155	915	2120	3035	19	40	60	Sonic Wave	Pump
	2	2½"	2:50 Min.	13–15	940	780	1720	*20–21	85	15	Sonic Wave	Pump
	3	2½"	3:45 Min.	55–61	15	290	305	20	88	12	Sonic Wave	Pump
	†4	2½"	7:25 Min.	0	....	....	350	21	94	6	Sonic Wave	Pump
	6	2½"	7:00 Min.	30–37	105	170	275	24	50	50	Sonic Wave	Pump
	†7	2½"	7:45 Min.	30	....	....	520	20	93	7	Sonic Wave	Pump
	9	2½"	7:05 Min.	15–25	810	1460	2270	18	44	56	Sonic Wave	Pump
	†10	2½"	6:05 Min.	15–10	135	180	315	19	91	9	Sonic Wave	Pump
	†11	2½"	6:50 Min.	17–3	895	440	1335	19	1	99	Sonic Wave	Pump
	†12	2½"	3:40 Min.	26–10	20	290	310	19	90	10	Sonic Wave	Pump
E. L. Walker (Tate Survey)	4	2½"	0:45 Min.	64	220	780	1000	30	0	100	B.H.P. Gauge	Flow
	9	2½"	0:30 Min.	40	680	720	1400	16.6	0	100	B.H.P. Gauge	Flow
C. O. Christian (Simms-Elliott-Whitman Survey)	7	2½"	3:35 Min.	65	312	630	942	55.61	0	100	B.H.P. Gauge	Flow

* Actual Gauges. ‡ Based on 100% Vol. Eff. Plunger stroke assumed same as Polish Rod stroke. † Wells with reduced pump submergence.

stalled on a well which was pounding fluid to better understand the action at the pump. No fluid level had been determined at that time and it was thought the apparent gas lock was due to the pump action rather than to the well's low productivity factor which investigation later revealed.

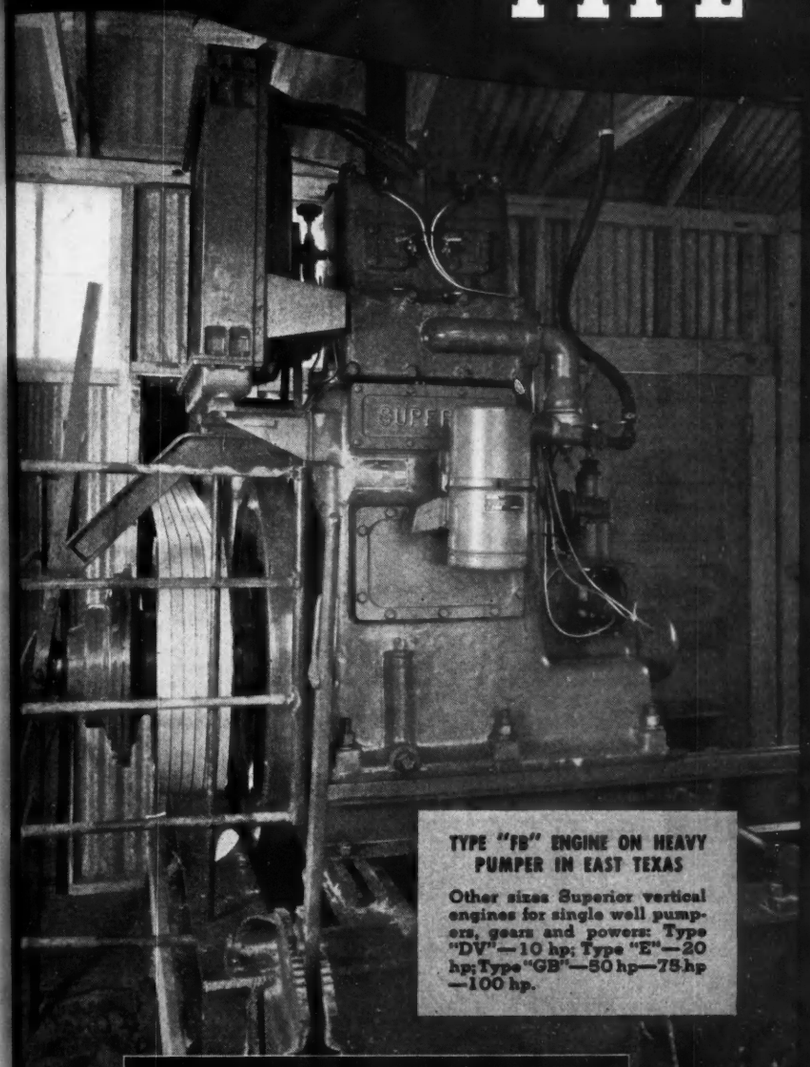
These different tests were made: Two tests changing the pump location in the string and lastly installing a gas anchor. The well was produced 17.5 strokes per minute, polish rod stroke of 49.5 inches with a 2½-inch common working barrel, ¾-inch rods set at 2011 feet. On the first run, the sub-surface dynagraph card indicated a plunger stroke of 42.5 inches at the pump, effective stroke decreasing from 46 inches to 27 inches due to gas action, a plunger load of approximately 4000 pounds and a good volumetric efficiency until four hours after starting up. At this time production dropped from 20 barrels per hour rate to 8 barrels per hour. The next test was made by raising the dynagraph and pump to 1777 feet from the surface and running at the same speed. Plunger stroke was increased to 46.5 inches although load decreased to approximately 3000 pounds and volumetric efficiency ranged from 100 percent down to 41 percent at the end of a 12 hour period. Production again decreased as



CURVE 2

Graph of fluid level determinations on West Side wells of Cities Service Oil Company in the East Texas field. Survey made December 1, 1939.

Superior
TYPE "FB"



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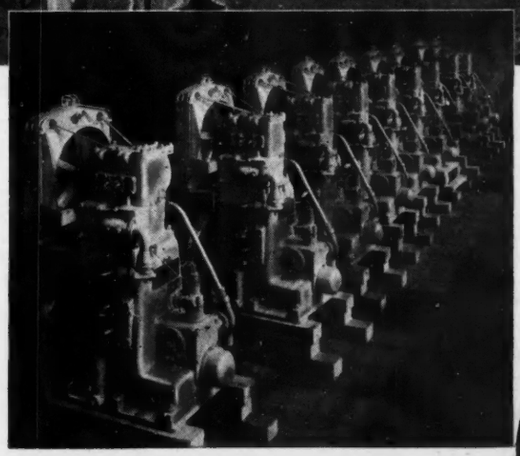

This is a shipment of Type "FB" Engines to a producer in East Texas where many are already in service.

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in the previous test and a comparison of the effective plunger stroke which compared to the total stroke of 46.5 inches showed gas was passing through the pump causing the effective stroke to be only 20.5 inches which was a decrease of 26 inches or 56 percent.

Believing a gas anchor would tend to eliminate the apparent gas trouble in this well, a third run was made after installing a gas anchor with the pump set at 1777 feet, the gas anchor on bottom of pump barrel. Results of this run was to increase the plunger load, increase the effective stroke to essentially same as the plunger stroke. These two factors indicated that the gas was being eliminated and a denser fluid was being handled through the pump. However, as stated before, the productivity index was quite low which permitted the fluid to decrease the working fluid level to within six feet of the pump and the results obtained were not considered representative of de-

are pumped at rates considerably less than their potential, a separation of the fluid into its components occurs under static or equilibrium conditions, that is, each component such as gas, foamed oil, clean oil, mixture of oil and water or B.S. and lastly bottom hole water. However, when the pump is removing the fluid at the same rate as it is flowing into the well bore, which is the condition obtained when the "working" fluid level is stationary, the fluid below in the producing horizon and that entering the tubing are essentially the same.

In the annulus above the producing formation, where direct flow from the formation is not taking place, a gravitational separation will result from the quiescent condition, with the oil, B. S. and water proportions depending upon the age of the producing well. The degree to which this separation takes place depends upon:

(1) The stability of the oil-water

must be handled through the pump. Various means to eliminate gas locking can be employed; the more common of which is using a suitable gas anchor, spacing standing valve and traveling valve close together decreasing the clearance or by using a pump with a high compression ratio.

Present Application

After securing the test data this company has been systematically applying this principle to the pumping wells where the feasibility is proven from similar studies as has been made on three leases. At the present time 10 wells which constitute 40 percent of the company's total of 25 wells on the pump are producing with the working barrel somewhere above the conventional position. These leases and wells constitute all the firm's pumping wells at this time and are equipped already with multi-well hook-ups or central powers, which are capable of producing from bottom. For this reason some wells

TABLE 4

History of Fluid Levels and Bottom-Hole Pressures, Cities Service Oil Company, East Texas Field

LEASE	Static Fluid Level (as of First Record) in Feet	Static Fluid Level as of December 1, 1939 Feet	Static Fluid Level Change (Total Interval) in Feet	Static Fluid Level Change per Month	Bottom Hole Pressure as of 1-1-1933	Bottom Hole Pressure as of 12-1-1939	Change in Bottom Hole Pressure	Change per Month in Bottom Hole Pressure
A. A. Lockhart	710	770	— 60	— 2.4	1441	1098	—343	— 4.13
J. T. Jeter	430	660	—230	— 4.5	1489	1174	—315	— 3.79
V. L. Taylor	500	670	—170	— 3.3	1453	1086	—367	— 4.42
E. L. Walker	490	550	— 60	— 1.5	1449	1112	—337	— 4.06
C. O. Christian	560	910	—350	— 7.4	1426	1142	—284	— 3.42
Average above Leases	...	712	.....	— 3.8	1452	1122	—330	— 3.97
Change per Year	...	...	.....	—45.6	....	....	.....	—47.64

creased submergence in high capacity wells. Even though these results were not as good as expected, the test does tend to indicate that: (1) with a short rod string the effective plunger stroke is greater, due to less rod elongation, (2) gas can be decreased by utilizing a gas anchor if the well is troublesome, (3) and the volumetric efficiency will be high when the pump has sufficient submergence.

Effect on Production

An investigation of the producing history of the test wells and others based on actual gauges shows that the change in method of producing did not apparently cause an increase in the oil-water ratio or any reduction in the oil content. It is believed this may be explained because when wells of high productivity, such as is prevalent in the East Texas Field,

mixture, due to emulsifying agents, and fluid characteristics.

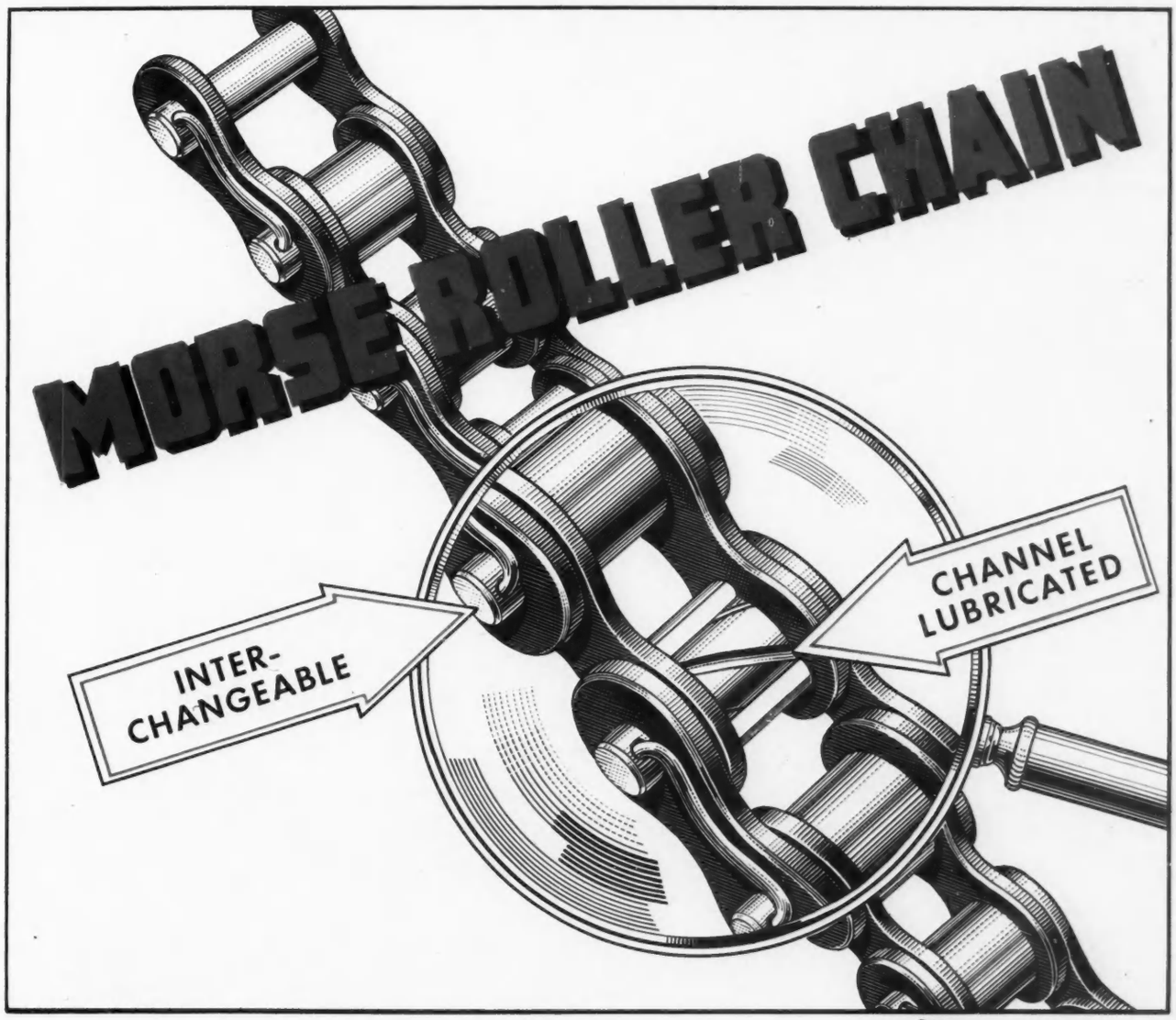
(2) The duration that equilibrium conditions have existed. In wells where the water and oil are readily separated, which is most frequent in large water wells, the water and most of the settlings will be carried away by the fluid stream which means the density of the fluid in the column will be substantially the same density of the clean oil.

In a few wells where this application was made some "gas locking" which causes a fluid pound was observed. In three instances before fluid level determinations were made it was necessary to lower the pump. Liberation of the formation gas begins to occur when the fluid pressure is lowered to 755 pounds per square inch absolute[3] and the placement of the pump above 2300 feet from bottom, in most cases, means free gas

on which tests indicate up the hole pumping is feasible, the barrels will be changed when conditions warrant. It will remain for the future pumping wells of this company or others adopting the practice to enlarge these data. For a summary of the pump location in wells at the present see Table 5.

Economies Affected

When the end of the flowing life occurs in East Texas wells a substantial investment is required to permit an operator to continue producing his properties. This means higher operating costs and a longer payout will be experienced due to this expenditure and change in producing method. With the constant decline in revenue due to the change in the well producing method, operators are desirous in holding this added investment to a minimum by selecting a



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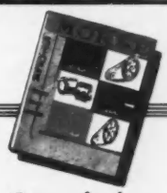

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method by which the investment is constantly in keeping with the actual needs, even though the overall ultimate cost may be the same. Best practice in the past has been to install individual units, or multi-well hook-ups for West Side wells, costing approximately $3500 to $4000 per well. This is for 20 to 30 horsepower per well installed. For comparative purposes Table 6 sets out the initial investment required for conventional pumping from bottom as compared to a typical up-the-hole installation. The initial investment as indicated by the table shows that approximately $1850 per well can be wholly eliminated or deferred which would mean appreciable savings in investment to an operator adopting this practice.

From work to date, it is believed in many instances wells may be fully depleted with this small unit, however, should this prove not to be the case the duration which these smaller units may be utilized would offset the additional cost of replacement and still make a cash savings for the producer by deferring the cash required. This latter condition assumes, of course, the operator is confronted with constant pumping and equipping problems, which will enable him to use the shall unit on new pumping wells at such time they should prove inadequate for the large nearly depleted water wells.

Since ultimate producing requirements appear to be volume in the range of 500 to 600 barrels of fluid per 24 hours day, this being subject to revision depending on the price of oil, operating, treating and disposal costs, and the per well allowable, it is believed up-the-hole practice would be advisable in that the utilization of the available reservoir energy will permit a reduction in both operating and investment costs. Operating economies due to less weight to be lifted, lower peak torque on the reducer, and lower power input requirements all result when the rod string is shortened. Maintenance expenses are also decreased because faster well servicing can be accomplished. No attempt has been made to evaluate these latter factors but it is certain they will be appreciable when a large number of wells are being pumped up-the-hole.

Pumping Unit Capacities

The use of the 10 horsepower pumping unit as applied to up-the-hole pumping has certain inherent hazards which should be brought out to anyone contemplating this application in order to prevent misapplication with subsequent equipment failure and financial loss. Any present day pumping unit is designed to render service to the purchaser providing it is not misapplied. Only two fundamental principles govern the loading of a pumping machine. These are, (1) the effective lift or load, (2) the rate at which the production is desired. This latter factor is most important because many times a machine can be overloaded by simply shortening the pumping time by increasing the rate of fluid production, by increasing the sub-surface equipment size which causes heavier loads to be imposed upon the reducer so that the peak torque rating is exceeded.

The tests run with ¾-inch rods and a beam multiplication to 41 inches on the standard 34 maximum stroke unit, though well counter-balanced, at high speeds tend to exceed the manufacturer's torque rating even though the polish rod load and horsepower were still within maximum ratings. However, it is believed the use of ⅝-inch rods, which are more adaptable for this size unit is best practice. These rods were not available for use when this test was started.

Since ultimate producing requirements appear to be volume rather than load capacity in East Texas, the use of ⅝-inch sucker rods with a beam multiplication to obtain a 41-inch polish rod stroke will enable the 10-horsepower unit to produce nearly 600 barrels of fluid per 24 hour day when running 30 strokes per minute. Contrary to present slower pumping speeds no apparent injury will result by using a short fast stroke, providing the peak torque rating is not exceeded. This load can be limited by not permitting the pump to be lowered down the hole beyond the ultimate depth which would exceed the manufacturer's rating.

Curve 3 has been drawn from calculations tabulated in Table 7 based on using a 10-horsepower unit of

TABLE 5

Wells with Reduced Submergence Cities Service Oil Company East Texas Field, As of December 1, 1939

SURVEY	LEASE	Well No.	Top Sand Feet	Conventional Pump Position	Present Pump Position Feet	Decreased Pump Submergence Feet
Hokit	J. T. Jeter	4	3581	3580	2100	1480
Hokit	J. T. Jeter	7	3581	3580	1475	1105
Hokit	J. T. Jeter	10	3578	3590	2075*	1415
Choate	J. T. Jeter	11	3575	3580	1500	2080
Choate	J. T. Jeter	12	3579	3585	2400*	1185
H. R. Hokit	J. T. Jeter	13	3595	3570	1500	2070
Tennison	A. A. Lockhart	2	3646	3650	1450	2200
Tennison	A. A. Lockhart	9	3628	3625	1500	2125
Tennison	V. L. Taylor	1	3696	3700	1500	2200
Tennison	V. L. Taylor	6	3697	3700	1750	1950

* Due to wells being on jacks having long rod lines, it was felt advisable not to remove too much weight from the sucker rod string, in order that the wells might be pumped faster without rod line "slapping".

TABLE 6

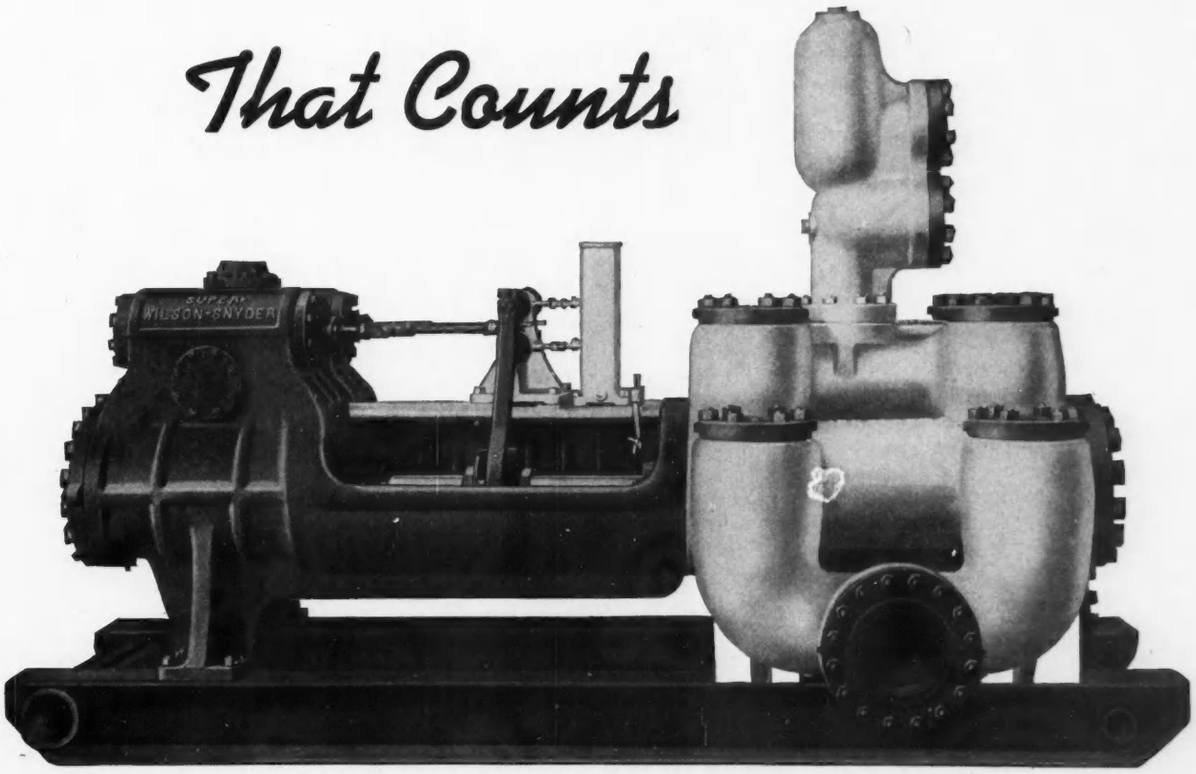
Comparison of Installation Costs, Conventional vs. Decreased Submergence, East Texas Field
(Based on Average Costs)

	A 10 H. P. Torque Rating 50,000 Inch Pounds	B 20 H. P. Torque Rating 100,000 Inch Pounds	Difference B—A
Surface:			
Unit—Twin Crank Steel Skid, Rot. C. B. Complete.	$1,300.00	$2,150.00	$ 850.00
Foundation	100.00	250.00	150.00
Sub Total Unit in Place	$1,400.00	$2,400.00	$1,000.00
Prime Mover with drive Belts	375.00	800.00	425.00
Total Surface	$1,775.00	$3,200.00	$1,425.00
Sub Surface:			
1500 feet—⅝" Rods at 13 cents	$195.00	.....	.....
3600 feet—¾" Rods at 17 cents	.....	$ 620.00	$ 425.00
Total of Sub and Surface	$1,970.00	$3,820.00	$1,850.00

Includes only comparable major items, exclusive of tubing, as miscellaneous material, not included.

It's the COST PER FOOT of hole

That Counts



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50,000-inch pound peak torque rating pumping unit at the maximum capacity. The table and curve shows the various fluid lifts, stroke lengths and strokes per minute to obtain various rates of production. For example, assuming a 2¼-inch barrel, 2½-tubing, pumping 24 strokes per minute to stay within the limits of the unit it would be possible to pump from 2160 feet, the effective lift, and to produce 243 barrels per 24 hour day (10 barrels per hour) using a 26-inch polish rod stroke. This would require 8.19 horsepower. If the fluid level were higher and it was desired to produce 379 barrels per day, (15.7 barrels per hour), the well could be pumped twenty-four 34-inch strokes from 1600 feet and require 8.32 horsepower. Other conditions may be chosen similarly. The use of ⅝-inch rods would further extend the fluid capacity in that these calculations are for pumping water with a specific gravity of one and using ¾-inch sucker rods. Reasonable efficiency factors have also been used which give a safety factor.

Summary

By making tests as has been described previously and studying the individual wells producing characteristics, such as permeability, bottom-hole pressure, and productivity index, the efficiency of reducing the pump submergence can be predicted before permanent equipment is installed. This is best accomplished by setting a temporary test unit and producing the well to obtain a full drawdown in fluid level and locating the working fluid level by a sonic wave device. After this is done, the permanent setting can be made and the pump set at the predetermined depth at which the well can be produced efficiently and economically. This has been in the range of 1500 to 2000 feet in wells thus far, however, considerable variation can be expected.

Conclusion

It is concluded from the data obtained from the tests that where the practice of reducing the pump submergence is applicable, definite advantages and disadvantages may accrue to the operator. These are:

Advantages:

1. The initial pumping equipment investment may be decreased $1500 to $1850 per well as compared to past practice.

2. The well is not injured by this practice and it is possible some retardation of water encroachment may occur.

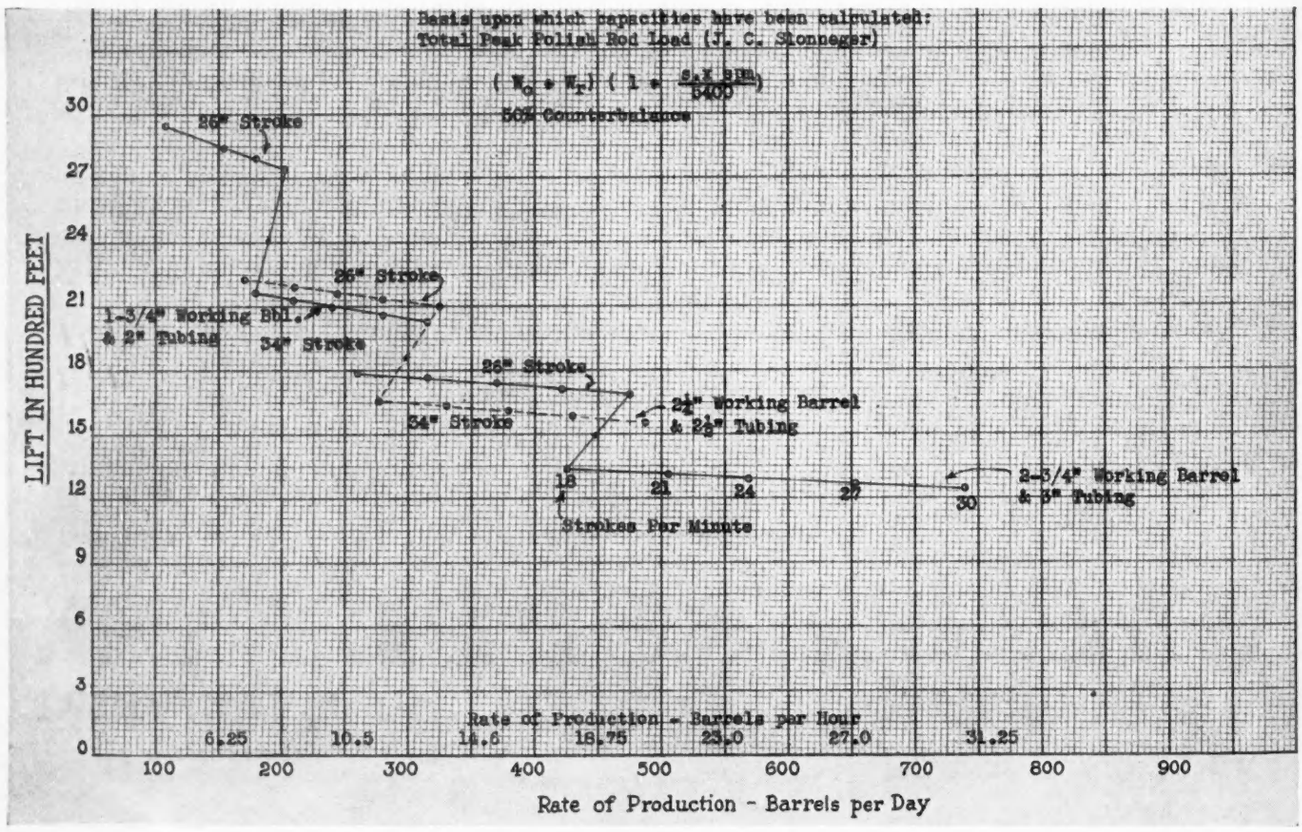
3. Operation and maintenance expense will be decreased due to the smaller equipment and shorter rod string.

4. A reduction in horsepower required will be 46 to 55 percent or a saving of four to seven horsepower per installation. Peak well loads will be decreased from 8800 pounds to 4200 pounds at 21 strokes per minute or a 52 percent or more reduction is obtainable.

5. The application will extend from the initial installation time until the well is either fully depleted or very near this point. The savings accomplished by deferring the cash requirement will more than offset the infrequent additional costs incurred, should a larger unit be necessary for depletion.

From the few wells tested it appears that plugging off bottom hole water by the "squeeze" or "semi-squeeze" method causes an appreciable decrease in sand permeabilities, or penetration, or both, which precludes the possibility for high working fluid levels.

It also may be concluded that from data on five leases the rate of decline


Basis upon which capacities have been calculated:
Total Peak Polish Rod Load (J. C. Stonneger)
50% Counterbalance
26" Stroke
26" Stroke
1-3/4" Working Bbl. & 2" Tubing
34" Stroke
26" Stroke
34" Stroke
2¼" Working Barrel & 2½" Tubing
2-3/4" Working Barrel & 3" Tubing
Strokes Per Minute
LIFT IN HUNDRED FEET
Rate of Production - Barrels per Hour
Rate of Production - Barrels per Day

CURVE 3

Capacity curves for 10-horsepower unit with maximum torque rating of 50,000 inch pounds

West Montebello

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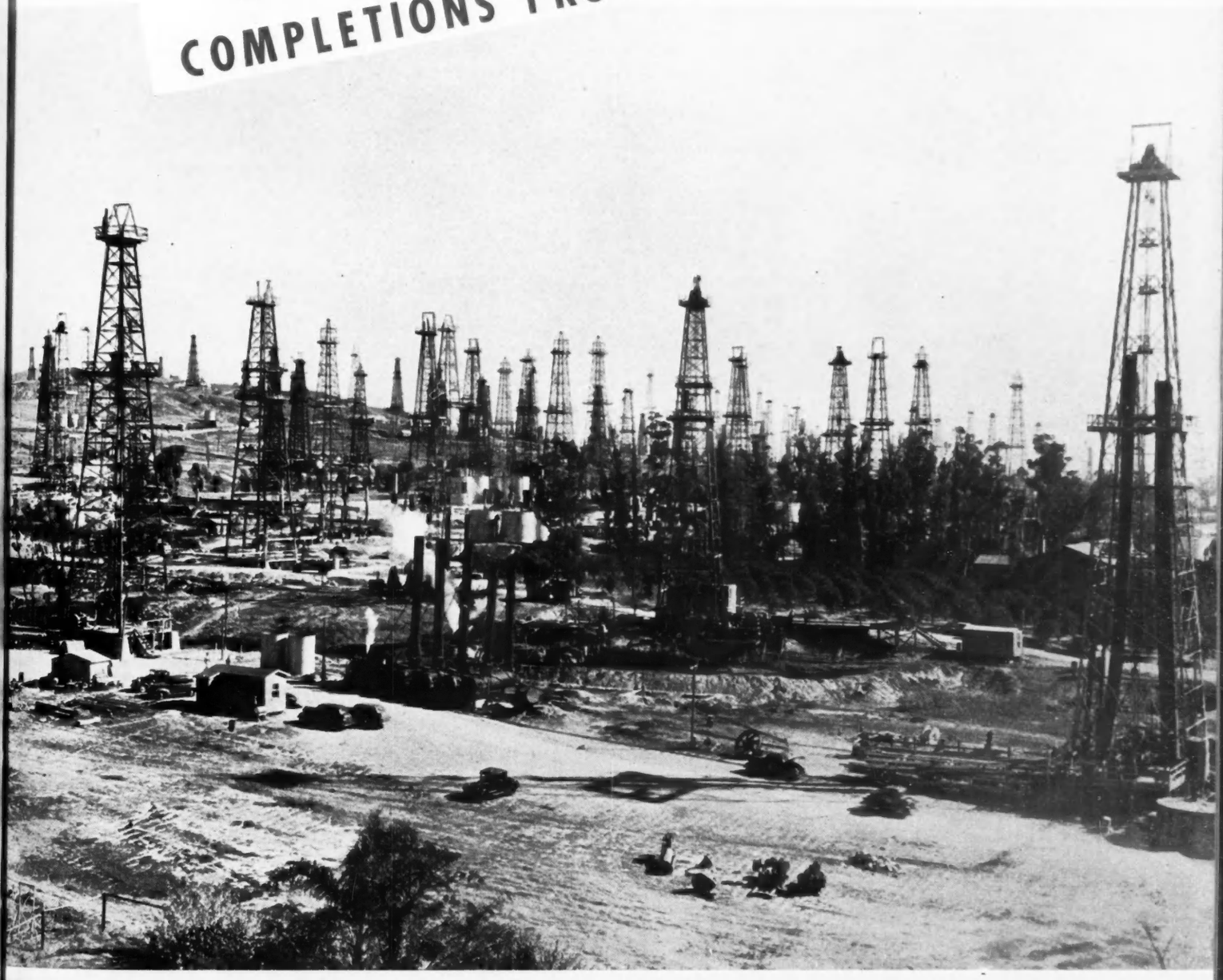

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Disadvantages:

1. Unless proper and sufficient pump submergence is obtainable and attention is given to the pump, "gas locking" may occur which not only decreases the pump volumetric efficiency but causes unpredictable stresses to be imposed upon the surface equipment.

2. Unless strict supervision and proper design of the sub-surface equipment is made to prevent misapplication of the smaller rated units, a financial loss due to equipment failure may result.

3. Misplaced working barrels might create excessive pulling expense although this could be limited by multiple barrel installations.

4. It is highly essential to make a preliminary test and detail study of the individual wells before a permanent setting is made and this will cost approximately $150 per well.

Further, it is realized that considerable skepticism may be attached to this departure from the past conventional practice on the west side pumping wells in the East Texas field and that further testing is needed to make the information more comprehensive in order to better affirm or refute the present available data. Also it is hoped progressive testing by many other operators will result from the work now presented.

TABLE 7

10-Horsepower Pumping Unit Capacity Data

Based on formula by J. C. Slonneger—Falk Corporation

$$\text{Total Peak Polish Rod Load} = (W_o + W_r)\left(1 + \frac{S \times SPM}{5400}\right)$$

Sample Calculation:

Maximum torque rating = 50,000 inch pounds Average Torque Rating 26" Stroke—18 strokes per minute

$\frac{50{,}000}{13} = 3850$ lbs. load after counterbalancing

(50% C.B.) $3850 \times 2 = 7700$ lbs. Max. load including $\left(1 + \frac{S \times SPM}{5400}\right)$

$(1 + \frac{S \times SPM}{5400}) = (1 + \frac{26 \times 18}{5400}) = 1.0867$

$\frac{7700}{1.0867} = 7100$ lbs.—Static polish rod load required to develop the maximum torque rating of unit for these conditions.

Maximum Polish Rod Load of Unit for Various Conditions

Length of Stroke	18 S.P.M.	21 S.P.M.	24 S.P.M.	27 S.P.M.	30 S.P.M.
*18"	10,480 lb	10,380 lb	10,280 lb	10,180 lb	10,080 lb
26"	7,100 lb	6,980 lb	6,900 lb	6,810 lb	6,720 lb
34"	5,280 lb	5,190 lb	5,110 lb	5,030 lb	4,950 lb

* 18" Stroke was not calculated due to the low capacity.

2¾" Working Barrel—3" Tubing—Weight Rods and Fluid 4 lbs. per ft.

	26" Stroke				34" Stroke			
S.P.M.	Lift, Feet	Torque, Inch Pounds	B.P.D.	H.P.	Lift, Feet	Torque, Inch Pounds	B.P.D.	H.P.
18	1775	50,000	260	7.57	1320	50,000	427	7.50
21	1745	50,000	314	8.83	1300	50,000	503	8.85
24	1725	50,000	368	10.21	1280	50,000	568	10.18
27	1700	50,000	423	11.64	1260	50,000	657	11.79
30	1680	50,000	477	13.18	1238	50,000	739	13.32

2¼" Working Barrel—2½" Tubing—Weight Rods and Fluid 3.2 lbs. per ft.

	26" Stroke				34" Stroke			
S.P.M.	Lift, Feet	Torque, Inch Pounds	B.P.D.	H.P.	Lift, Feet	Torque, Inch Pounds	B.P.D.	H.P.
18	2220	50,000	172	6.07	1650	50,000	277	6.08
21	2180	50,000	210	7.04	1620	50,000	329	7.08
24	2160	50,000	243	8.19	1600	50,000	379	8.32
27	2130	50,000	281	9.33	1570	50,000	430	9.40
30	2100	50,000	326	10.50	1545	50,000	487	10.63

1¾" Working Barrel—2" Tubing—Weight Rods and Fluid 2.45 lbs. per ft.

	26" Stroke				34" Stroke			
S.P.M.	Lift, Feet	Torque, Inch Pounds	B.P.D.	H.P.	Lift, Feet	Torque, Inch Pounds	B.P.D.	H.P.
18	2900	50,000	108	4.52	2160	50,000	177	4.46
21	2850	50,000	131	5.31	2120	50,000	209	5.27
24	2820	50,000	156	6.09	2090	50,000	242	6.16
27	2780	50,000	182	6.95	2050	50,000	279	7.08
30	2740	50,000	207	7.81	2020	50,000	314	8.06

Factors:—W_o = Weight of fluid based on water with sp. gr. 1.0.
W_r = Weight of Sucker Rods ¾" in above tables.

Acknowledgments

The writer gratefully acknowledges the suggestion of Mr. C. S. Warren which inaugurated this work, the cooperation of Mr. F. A. Lawrence and Mr. J. P. Straight, making possible the changes in the various wells and assisting in the production study. Mr. P. A. Cole and Mr. M. R. Shaffer, Jr., were responsible for the drawings.

Several service departments of the supply companies who were kind enough to furnish both equipment and personnel in assisting with the tests are gratefully acknowledged also.

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Drilling Activity Continues Above 1938 Trend

By L. J. LOGAN, Associate Editor

UNDER the influence of the general business boom and the improved conditions in the oil industry, United States drilling has continued exceptionally active, and the brisk development doubtless will proceed to the end of the year.

October and November of 1939 have furnished more new wells than the corresponding months of any other post-depression year except 1937. Similarly, the final month of the year likely will go into the records as the busiest December since the major depression with the exception of that in 1937.

Strong Markets Encouraging

The current brisk drilling has resulted from pronounced improvement in the markets for both crude and refined oils since mid-August.

The factors that strengthened the markets at that time—the half-month oil-field shutdowns in the Mid-Continent and the outbreak of the European war, still are exerting a stimulating effect.

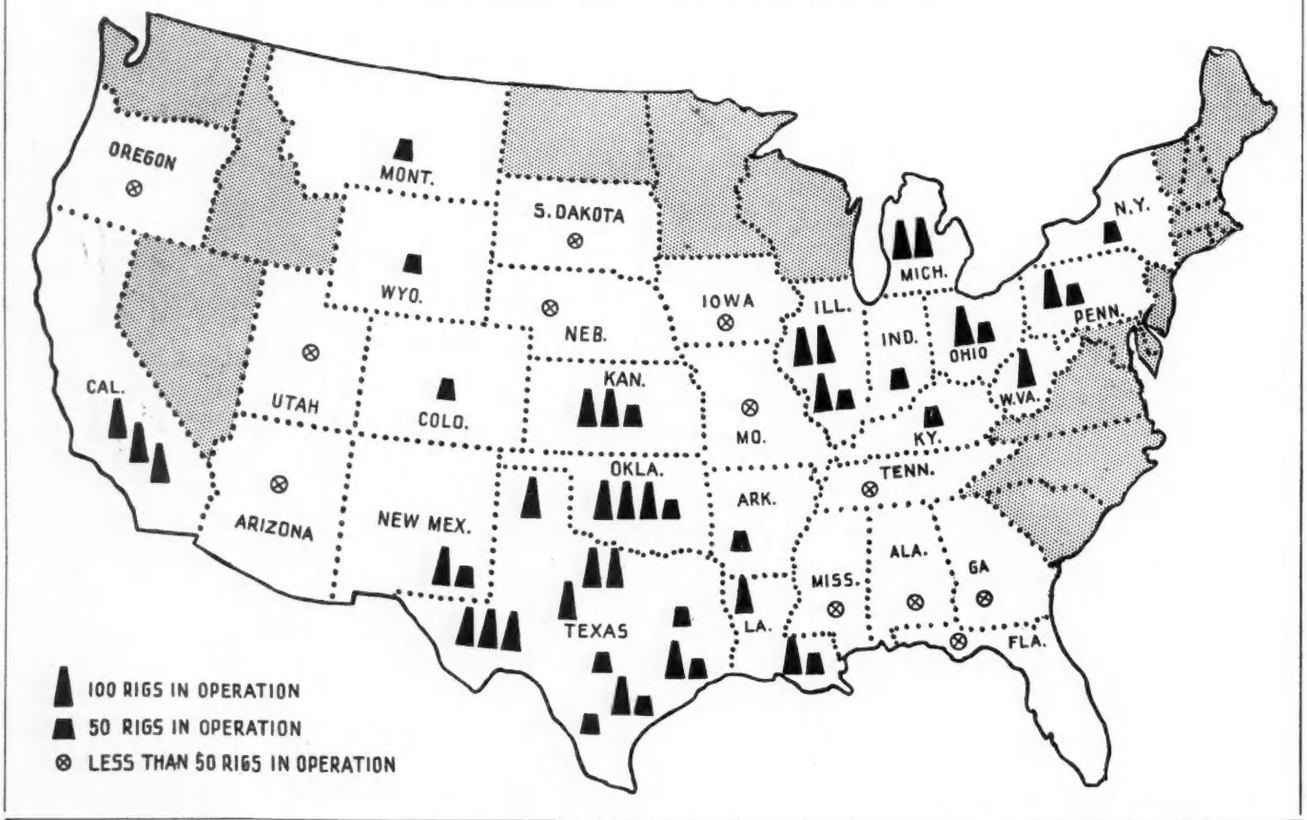
Crude oil stocks were reduced through the shutdowns to the lowest level since early 1922, and subsequently they have been held near that low stage, through strict curtailment of crude oil production.

In some instances, premiums have been paid for crude and still are being paid. Particularly strong are the markets for crudes that are desirable for making aviation gasoline, lubricants, and fuel oils, the stocks of such crudes being comparatively small and supplies available at the wells being limited.

While premiums are being paid for some crudes, there have been moderate to sharp increases in the posted prices of oils of various grades in the past three months. Consequently, an upward revision of postings on a nation-wide scale is regarded as definitely possible, particularly after the end of the year.

The Appalachian fields have had the most noteworthy crude price increases, because of great demand for lubricants. The Pennsylvania-grade crude postings have been advanced 52 cents a barrel in three raises since the beginning of October. But there have been moderate increases also in several other areas, including Illinois, Southwest

3981 Rigs in Operation in United States



Texas, the Texas-Louisiana Gulf Coast, and miscellaneous fields in Texas, Louisiana, Arkansas, and Oklahoma.

The strong crude markets naturally have encouraged producers to proceed confidently with the drilling of new wells.

Whether or not the crude markets will continue strong will depend on the future course of demand for refined products and the degree of success in holding crude production within market demand. But the outlook for oil demand remains bright, and a continuation of strict crude control seems assured. Consequently, it is indicated that crude prices should remain at present levels or even show some improvement by next spring.

In so far as the crude market outlook is concerned, therefore, a continuation of aggressive drilling is in prospect.

November Results

Well completions in the United States in November averaged 80.4 daily, field work having continued practically as great as in October and at about the same proportions as in mid-summer.

The 80.4 completions daily of November compared with 81.1 daily in October. Because of the retarding effect of the summer shutdowns in the Mid-Continent, completions had averaged only 66.4 daily in September and 77.7 a day in August. July had been the most active month of the year, with 82.8 completions a day.

November's drilling was 3.2 percent greater this year than last year, the 80.4 completions daily in the eleventh month of 1939 having compared with 77.9 daily in that month of 1938. The November drilling this year was 14 percent under that in 1937, when development was around all-time record levels.

First 11 Months

Except in a few months, this year's drilling has been closely following the trend of that in 1936, having been somewhat below that trend in the spring and a little above it recently. For the first 11 months of 1939, completions totaled 24,107, as compared with 24,751 in the similar period of 1936. For the whole year of 1939, the completions likely will increase to approximately 26,300, or within 2.3 percent of the 26,935 for all of 1936.

The indicated 26,300 completions for 1939 would be only 4.4 percent fewer than the 27,528 recorded for 1938. (In the Year Book—Forecast number, January 30. 1939, THE OIL WEEKLY, estimated that completions in 1939 would total 25,965, or 5.4 percent less than those of 1938.)

In the first 11 months of this year, 24,107 wells were completed in the United States. That was 5.4 percent fewer than the 25,385 finished in the similar period of last year. The completions in the first 11 months, from 1933 through 1939, have been as herewith indicated.

First 11 Months of:	Number of Wells Completed
1933	10,853
1934	17,193
1935	20,641
1936	24,751
1937	30,721
1938	25,385
1939	24,107

Drilling Gains Shown

Although 5.4 percent fewer completions have been drilled this year than last year, almost half of the

November Activity Brings Completions for 11 Months of 1939 Nearer to 1938 Level

STATE OR DISTRICT	NOVEMBER, 1939, COMPLETIONS* AND CRUDE OIL PRODUCTION						COMPLETIONS AND PRODUCTION IN FIRST 11 MONTHS, 1939 AND 1938									
							WELLS COMPLETED			DETAILS OF 1939 DRILLING				BARRELS PRODUCTION		
	Total Wells	Oil	Gas	Dry	Initial Production	Production for November	1939: 11 Mo.	1938: 11 Mo.	Percent Change	Oil	Gas	Dry	Initial Production	1939: 11 Months	1938: 11 Months	Percent Change
Arizona	1			1			1					1				
Arkansas	14	10	1	3	5,625	2,069,000	213	199	+ 7.0	167	3	43	71,649	19,077,700	16,793,650	+13.6
California	101	93	...	8	72,303	18,395,700	994	1,195	— 16.8	767	7	220	660,682	206,088,800	230,093,400	—10.4
Colorado	1			1		115,000	19	9	+111.0	7	2	10	966	1,279,150	1,289,600	— 0.7
Eastern States	811	558	95	158	114,459	‡3,097,400	7,726	6,538	+ 18.2	5,090	1,124	1,512	1,074,088	‡32,749,150	51,332,000	.....
Illinois	†371	†282	2	87	106,203	9,901,000	†3,444	†1,625	+112.0	†2,701	26	717	1,045,396	69,277,250	.....	.....
Indiana	43	29	4	10	6,531	.....	257	152	+ 69.0	117	30	110	4,162	.....	.....	.....
Kentucky	57	22	15	20	681	.....	592	732	+ 19.1	238	92	262	15,365	.....	.....	.....
New York	†69	†69	...	...	390	.....	†577	†640	— 9.9	†533	23	21	2,081	.....	.....	.....
Ohio	99	30	37	32	434	.....	897	855	+ 4.9	219	436	242	3,508	.....	.....	.....
Pennsylvania	†114	†111	1	2	157	.....	†1,426	†1,896	— 24.8	†1,186	157	83	1,883	.....	.....	.....
West Virginia	58	15	36	7	63	.....	533	638	— 16.4	96	360	77	1,693	.....	.....	.....
Kansas	119	82	13	24	§343,462	5,284,600	1,312	1,543	— 15.0	921	65	326	2,001,160	52,478,600	54,087,400	— 2.9
Louisiana	114	79	6	29	22,161	8,080,800	1,036	997	+ 3.9	788	36	312	215,213	86,192,200	87,177,300	— 1.2
North Louisiana	32	17	5	10	4,952	2,025,400	302	477	— 36.7	189	24	89	57,201	22,945,550	26,135,000	—12.2
South Louisiana	82	62	1	19	17,209	6,055,400	734	520	+ 41.3	499	12	223	158,012	62,764,700	61,042,300	+ 2.8
Michigan	124	73	6	45	23,170	1,929,900	1,366	918	+ 48.7	751	79	536	353,104	21,194,350	17,447,850	+21.5
Montana	11	6	1	4	491	503,900	131	75	+ 74.8	94	13	24	9,297	5,039,000	4,473,350	+12.6
New Mexico	57	53	...	4	24,396	3,019,500	536	479	+ 11.9	447	13	76	236,522	30,642,650	34,539,550	—11.2
North Dakota								1								
Oklahoma	161	89	14	57	19,360	12,670,200	1,871	1,945	— 8.9	1,125	129	617	361,546	139,305,800	156,957,100	—11.1
Southeastern States	4	1	...	3	750	29,900	20	24	— 16.6	4	1	15	1,336	29,900	.....	.....
Alabama	1			1			1	1				1				
Florida																
Georgia							1	1				1				
Mississippi	3	1	...	2	750	29,900	14	20	— 30.0	3	...	11	1,116	29,900	.....	.....
Tennessee							4	2	+100.0	1	1	2	120			
Texas	724	533	24	167	349,321	40,854,100	8,681	11,364	— 20.2	6,175	257	2,248	4,775,590	437,106,130	433,960,800	+ 0.7
East Texas Field	18	17	...	1	27,400	12,557,700	406	1,717	— 76.4	393	1	12	1,171,975	128,540,800	137,946,600	— 6.5
Rest of East Texas	22	11	5	6	2,144	2,692,000	258	452	— 43.2	105	26	127	37,835	30,353,350	31,483,400	— 3.7
North Texas	180	124	1	55	55,261	2,599,300	1,567	2,270	— 31.0	968	7	592	925,118	24,388,450	24,317,250	+ 0.2
South Texas	188	129	4	55	56,565	6,203,500	2,512	2,535	— 0.8	1,655	75	782	679,820	74,888,550	75,214,700	+ 1.7
Corpus Christi Area	88	67	...	21	47,073	.....	1,259	1,115	+ 12.9	947	46	266	553,210	.....	.....	.....
Laredo Area	79	52	4	23	8,413	.....	905	986	— 8.2	553	24	328	123,209	.....	.....	.....
San Antonio Area	21	10	...	11	1,079	.....	348	434	— 19.8	155	5	188	3,401	.....	.....	.....
Texas Gulf Coast	88	68	1	19	70,725	6,672,400	1,242	1,397	— 11.1	944	48	250	307,183	71,379,000	67,486,100	+ 5.8
Texas Panhandle	53	41	11	1	14,365	2,277,900	395	533	— 25.8	300	76	19	117,003	21,715,630	22,034,700	— 1.4
West Texas	148	132	...	16	113,422	6,950,400	1,880	2,133	— 11.9	1,650	6	223	1,460,408	72,680,150	65,773,300	+10.3
West Central Texas	27	11	2	14	9,439	900,900	421	327	+ 28.7	160	18	243	76,248	10,000,695	9,704,300	+ 4.1
Utah								4								
Wyoming	10	7	1	2	11,233	1,977,800	113	95	+ 19.0	80	6	27	88,604	20,100,000	17,571,300	+14.4
Total United States	2,252	1,585	161	506	986,731	108,233,300	24,018	25,385	— 5.4	16,316	1,735	5,967	9,422,208	1,133,582,100	1,105,723,350	+ 2.5

* November completions cover not the calendar month, but the four weeks, or 28 days, ended November 25.
† Includes water-input or pressure wells. ‡ Does not include Illinois. § Consists largely of potential determination made with fluid level metering apparatus.

districts and states have had gains in drilling.

Illinois has continued to furnish the year's most noteworthy drilling program, completions having been more than twice as numerous in 1939 as in 1938. The state accounted for 3444 new wells from January through November of this year, compared with 1625 in the corresponding months of last year. Illinois continues to rank easily as the second most active state, furnishing more than half as many completions as dominant Texas. In November, there were 371 completions in Illinois, compared with 724 in Texas, 161 in Oklahoma, 124 in Michigan, 119 in Kansas, 114 in Louisiana, 114 in Pennsylvania, 101 in California.

The success of development in Illinois has stimulated drilling in the adjacent state of Indiana, where completions have been nearly twice as numerous this year as last year.

Michigan ranks along with Illinois and Indiana as a particularly active state, having furnished 1366 new wells in the first 11 months of 1939, or 48.7 percent more than in the similar period of 1938. The state's completions currently are being exceeded only by those in Texas, Illinois, and Oklahoma, being more numerous than those in such other important oil states as Kansas, Louisiana, Pennsylvania, New Mexico and Arkansas. The brisk activity has resulted from the noteworthy success in finding new fields, particularly in the southwestern part of the state, where production is obtained at comparatively shallow depths.

While the most important gains in drilling this year have been those in the Middle West, noteworthy increases have occurred also in the Rocky Mountain states. Montana has been particularly active, having furnished 131 new wells in the first 11 months of this year, or 74.8 percent more than the 75 of the like period last year. Wyoming's 113 completions were 25 percent more numerous than the 95 through November of last year. Colorado has had twice as much drilling as in 1938.

New Mexico has had an 11.9 percent gain in drilling, having supplied 536 new wells this year, compared with 479 through November 30 last year.

Several states of the Mid-Continent have more completions to their credit now than they did at this time last year. Arkansas furnished 213 new wells in the first 11 months of 1939, compared with 199 in the corresponding months of 1938, a 7 percent increase; South Louisiana, 734 against 520, up 41.3 percent; the Corpus Christi district of Southwest Texas, 1259 against 1115, increase 12.9 percent; and West Central Texas 421 against 327, up 28.7 percent.

December 1 Field Activity Considerably Greater Than Year Ago

STATE OR DISTRICT	TOTAL RIGS IN OPERATION (Drilling, Rigs Up, Shut-Down)				DETAILS OF DECEMBER 1, 1939 DRILLING ACTIVITY					
					Rigs in Operation			Prelim. Activity		
	Dec. 1 1939	Nov. 1 1939	Dec. 1 1938	Percent Change from Year Ago	Drilling	Rigs Up	Shut-down	Derricks	Locations	Total Operations
Arizona	8	8	4	+100.0	4	...	4	...	...	8
Arkansas	42	54	51	— 17.6	29	12	1	5	...	47
California	273	323	286	— 4.5	180	60	33	42	46	361
Colorado	33	31	24	+ 37.5	10	...	23	...	...	33
Eastern States	901	943	977	— 7.8	559	94	248	136	131	1,168
Illinois	372	375	404	— 7.9	194	46	132	87	78	537
New Fields	242	244	288	— 16.0	127	34	81	60	67	369
Rest of Illinois	130	131	116	+ 12.0	67	12	51	20	18	168
Indiana	67	67	31	+116.0	49	6	12	13	12	92
Kentucky	66	71	87	— 31.8	30	7	29	10	7	83
New York	60	59	90	— 33.3	24	13	23	1	1	62
Ohio	130	127	135	— 3.7	77	13	40	6	7	143
Pennsylvania	159	158	138	+ 15.2	135	7	17	12	16	187
West Virginia	97	86	92	+ 5.4	70	12	15	7	10	114
Iowa	2	1	...	.....	1	...	1	...	...	2
Kansas	228	231	168	+ 35.8	173	34	21	11	10	249
Louisiana	214	202	229	— 6.5	184	15	15	42	47	303
North Louisiana	80	71	111	— 28.0	57	10	13	12	10	102
South Louisiana	134	131	118	+ 13.5	127	5	2	30	37	201
Michigan	228	223	200	+ 14.0	149	30	49	18	20	266
Missouri	22	17	...	.....	10	2	10	2	1	25
Montana	47	40	46	+ 3.1	30	2	15	...	...	47
Nebraska	10	1	...	.....	4	...	6	...	...	10
New Mexico	168	163	147	+ 14.3	123	7	38	...	17	185
Oklahoma	347	350	324	+ 7.1	242	45	60	42	20	409
Oregon	1	1	...	.....	1	...	...	...	...	1
South Dakota	2	1	...	.....	2	...	...	...	1	3
Southeastern States	38	28	20	+ 90.0	18	7	13	5	2	45
Alabama	2	2	5	— 60.0	...	...	2	1	...	3
Florida	3	4	5	— 40.0	...	...	3	1	...	4
Georgia	...	1	...	.....	...	...	...	...	...	...
Mississippi	24	15	10	+140.0	11	6	7	3	1	28
Tennessee	9	6	...	.....	7	1	1	...	1	10
Texas	1,300	1,210	1,135	+ 14.5	1,075	76	149	97	262	1,659
East Texas Field	12	9	43	— 72.0	11	...	1	4	4	20
East Texas Border Counties	9	11	31	— 71.0	3	1	5	...	2	11
Rest of East Texas	37	44	30	+ 23.3	23	3	11	4	5	46
North Texas	225	194	150	+ 50.0	190	9	26	5	62	292
South Texas	301	304	307	— 2.0	235	24	42	40	43	374
Corpus Christi Area	163	166	146	+ 11.6	138	10	15	21	20	194
Laredo Area	76	71	89	— 14.6	54	9	13	14	14	104
San Antonio Area	62	67	72	— 13.9	43	5	14	7	7	76
Texas Gulf Coast	169	146	141	+ 19.9	161	4	4	23	70	262
Texas Panhandle	121	109	77	+ 57.0	101	13	7	1	14	136
West Texas	339	313	280	+ 21.0	299	14	26	8	54	401
West Central Texas	87	80	76	+ 14.5	52	8	27	10	10	107
Utah	3	1	1	+200.0	2	...	1	...	1	4
Wyoming	64	77	64	.....	33	2	29	...	1	65
Total United States	3,981	3,905	3,676	+ 8.3	2,849	396	736	398	550	4,920

Rigs In Operation

Drilling continued exceptionally brisk throughout November, and there were somewhat more rigs in operation at the end of the month than at the beginning, according to surveys of current drilling by the staff men of THE OIL WEEKLY as of November 1 and December 1. Consequently, December may be expected to show, like October and November, a comparatively large number of completions.

Drilling rigs in operation in the United States on December 1 totaled 3981, according to the survey, another new peak for the year. The number of active rigs had been 3905 on November 1 and only 3625 on October 1. The 3981 operations of December 1, 1939, were 8.3 percent more numerous than the 3676 of December 1, 1938.

These figures include wells drilling, rigging up, and temporarily shut down.

The 3981 operations of December 1 included 2849 wells actually drilling, 396 rigging up, and 736 temporarily shut down.

Similar figures for earlier months were as follows: November 1, 3905 active operations, including 2734 wells drilling, 423 rigging up, and 748 shut down; October 1, 3625 operations, including 2468 wells drilling, 355 rigging up, and 802 shut down; September 1, 3717 operations, 2552 wells drilling, 351 rigging up, and 814 shut down.

Areas that were more active on December 1 than on November 1 included North Louisiana, South Louisiana, Michigan, Missouri, Montana, Colorado, New Mexico, Nebraska, Mississippi, Tennessee, North Texas, the Texas Gulf Coast, the Texas Panhandle, West Texas, and West Central Texas.

Hamer 1940 Geared Round Opening 6,000-lb.-Test Plug Valves installed on a deep-well rig. Hamer Union Line Blind on the pump suction in foreground.

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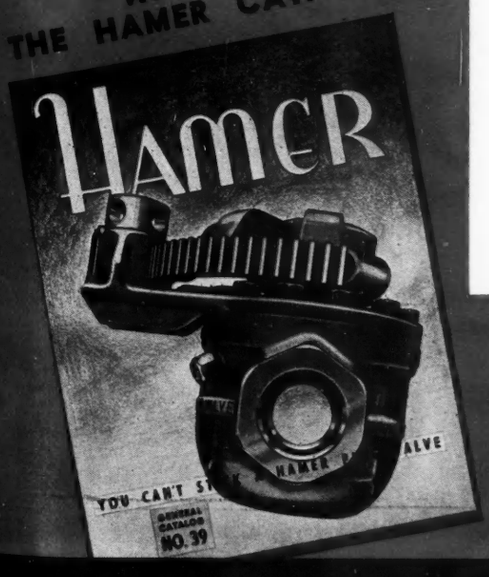

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A Special Report to Readers of The Oil Weekly from the Editors:

Your editors, staff writers and correspondents (18 in all) have just finished their annual conference in Houston where next year's editorial program has been planned for THE OIL WEEKLY. Each of us left the conference highly enthusiastic over the excellent editorial opportunities ahead for 1940.

The suggested subjects which came from many of you were helpful in our deliberations and you will find that they form the backbone of our new program. We only wish it had been possible for you to sit in with us while we discussed, analyzed and finally accepted the several hundreds of technical, engineering and feature subjects that are to receive our special attention next year.

You would have been impressed, we are sure, at the amount of time, energy and money we propose to expend in securing and publishing the best available data on all of the subjects of most interest and value to you in your particular work.

It would take too much space for us to tell you in this report about each of these subjects but in order that you may have some idea of what is in store for next year, take a look at the line-up of Special Numbers that have been planned.

THE OIL WEEKLY'S Schedule of Special Issues for 1940

1. Annual Yearbook-Forecast Number	**January 29**
2. International Survey Number	**March 18**
3. Geologist's Silver Anniversary Number	**April 8**
4. International Petroleum Exposition Number	**May 20**
5. Production Methods and Progress Number	**July 29**
6. Gulf Coast Development and Engineering Number	**September 23**
7. Annual A.P.I. Convention Number	**November 11**

Important Regional Features

In addition to these special numbers, your enthusiastic response in the past to what we term "Regional Development Features," initiated with our first Gulf Coast Number in 1933, has prompted us to arrange for a feature of this type each month on one of the more active areas including:

EAST TEXAS	**ILLINOIS**
FOREST CITY BASIN	**SOUTH LOUISIANA**
SOUTHWEST TEXAS	**WEST TEXAS-NEW MEXICO**
MISSISSIPPI	**CALIFORNIA**
NORTH TEXAS	**WESTERN KANSAS**

Naturally, any new area that may come into prominence during the year will be given similar attention.

When you consider the value of these special numbers and features, not to mention the greatly enlarged engineering and technical program referred to in the beginning, we are sure that you will share our enthusiasm as we set about to see that THE OIL WEEKLY in 1940 provides you with a complete and interesting record of every important development in the Production-Pipe Line Industry.

Editorial Staff—THE OIL WEEKLY.

Houston, Texas
December 11, 1939

HIGHLIGHTS IN THE WEEK'S NEWS

Allowables

New scheme for prorating East Texas oil presented

The statewide proration hearing at Austin December 15 before the Texas Railroad Commission, devoted its attention to interpretation of the marginal well law, discussion of abandonment of Saturday and Sunday shutdowns, and listening to a new scheme for handling production in the East Texas field.

West edge operations from the East Texas field presented a new plan of proration at a hearing before the Texas Railroad Commission last week which contemplates giving far larger allowances to west edge operators than is given to wells in the center and the east edge of the field.

The purpose of this program is to counteract the effect of the water drive—that is, permit west edge producers to get their oil before it is moved eastward ahead of the water. Only the oil in place beneath each tract would be recovered.

The current allowable would be continued—that is, each well would be given a minimum of 20 barrels, and the proratable oil distributed according to a formula. Wells high on the structure would be cut far below those on the west edge, but would eventually get their oil because they will produce so much longer.

Frank N. Spellers, consulting petroleum engineer who presented the plan, indicated he thought the field would produce for 50 years more. His plan contemplates some west edge wells recovering their oil within 2½ years. The present method of allocation is defective, Spellers said, because it includes both acre-feet of sand and potential, and because the pressure factor is not given enough weight to compensate for the migration of oil.

Sinclair Prairie Oil Company had representatives at the hearing to present its side of the case, and was expected to offer another plan for handling the west edge situation. This plan, is was expected, would embrace some program for salt water disposal, a problem which will become more serious if production along the west edge is increased.

May Abandon Shutdowns

Prior to the hearing Commissioners Sadler and Smith indicated they favored abandonment of the shutdowns and planned to institute seven-day production on February 1. Sadler had declared that East Texas could not produce more oil without waste, which meant that the per-well allowable for that field could not be maintained with 20 barrels as a minimum.

The East Texas Oil Producers Association asked the commission to let the field produce 690,000 barrels seven days each week, but at the hearing Sadler again declared this would be impossible from the standpoint of waste. To business men who said they were threatened with unemployment and loss of trade, Sadler answered that the increase requested would ruin the oil field and end business at the same time.

Much of the discussion on interpretation of the marginal well law arose from a brief read by Senator Clint Small of the Independent Oil Producers Equity Association, in which he advanced the argument that the commission might cut the allowable for any pumping well below the marginal allowance provided such a reduction did not lead to waste or premature abandonment of the well. He pointed out that the commission has in effect abandoned the marginal well law because many East Texas wells are not now permitted to produce 20 barrels daily, although they can produce far more.

Sadler read from the Rowan & Nichols opinion written by Federal Circuit Judge Foster which said in part that the commission could not cut pumping wells below 20 barrels.

Rex Baker, Humble attorney, insisted that the court had not passed fully on the marginal well law, that the reference made decided nothing.

Harold Neely, representing the West Central Texas Oil and Gas Association, asked that small marginal producers in the area be permitted to produce every day. He said the district allowable had been so reduced that income this year was cut one-third.

North Texas operators also asked for an increase, requesting 50 barrels per well daily for K-M-A, and production every day. They get 40 barrels now, but are closed 10 to 12 days monthly.

Phillips Petroleum Company asked that the Panhandle allowable be left intact during January, presenting evidence to show firm demand for the oil produced now, about 80,000 barrels daily net from the field.

Equity Association wants oil holidays eliminated

Readjustment of proration allowables of all fields in Texas so as to eliminate the necessity of continuing production holidays will be sought by the Independent Oil Producers Equity Association. The board of directors of the body, which was formed last September, assembled at Mineral Wells December 11 for their monthly meeting held in conjunction with the annual session of the West Central Texas Oil & Gas Association, and drafted a resolution that will request the Texas Railroad Commission to revise its proration policy effective with the January order.

Joe S. Bridwell, Wichita Falls producer and president of the association, announced that the resolution was prompted by requests from producers in numerous fields.

Shutdowns Causing Waste

Complains were voiced by operators that physical waste and actual damage to properties occurred during the 15-day production holiday in August, and the enforcement of a total of 30 off-days for most fields during the following 3 months. The proration schedule for the current month calls for 12 production holidays, although numerous fields and pools have been exempted by special orders. The use of production holidays as a means of restricting output without disturbing the base allowable was introduced in the East Texas field November 21, 1937. It originally applied to Sundays, then early in 1938 Saturdays were included at intervals, with the remainder of the state joining the cutback.

Discussions at the board meeting revealed that numerous operators are being unduly penalized by inequities that have developed through the granting of exemptions to the shutdowns, and the raising of the base allowable of important oil producing areas to compensate for the holidays.

Statistics were presented to show that total output of the state can be trimmed so as to remain within the figure set by the Bureau of Mines and also ad-

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here to the marginal-well law without resorting to production off-days.

The meeting went on record as favoring adherence to monthly production quotas fixed by the commission in order to check the growing practice of boosting the output of scattered fields through special hearings. The board recommended that applications for special or increased allowables be deferred until the next state-wide proration order.

California's allowable to be determined December 21

The regular monthly meeting of the Central Committee of California Oil Producers to set January quota for the state's pools, will be held at 2 p. m. December 21, according to Lawrence Vander Leck, chairman.

At the last meeting of the Central Committee, California's daily allowable was set at 599,000 barrels, and the top allowable for maximum producing wells cut to 204 barrels daily on the recommendation of the allocation committee. It is not known whether a new cut will be asked to aid in curtailment of large flush producers.

Kansas gas allowables set by commission

Market demand for natural gas in the Cunningham gas pool, Pratt and Kingman counties, for December has been set at 717,000,000 cubic feet by the Corporation Commission of Kansas. The net gas allowables are run from each well, production being from Viola lime. Allocation is on the basis of acreage times pressure times the square root of open flow potential.

December allowable for Lyons gas pool, Rice County, has been fixed at 279,000,000 cubic feet. Seven producers in the pool have a combined open flow of 150,600,000 cubic feet daily. In the Cunningham gas pool, 25 wells have a total open flow of 864,578,000 cubic feet per day.

Otis gas pool, Rush and Barton counties, has been given a market demand figure of 1,070,000,000 cubic feet daily. Since the pool now has adequate sulphur treating facilities for all wells in the field, gas purchasers are expected to continue the making up of overages and underages which have accrued to the various wells. In the field, 57 gas wells have a total open flow of 1,589,000,000 cubic feet daily.

Want increase for Smith sand in Yates field

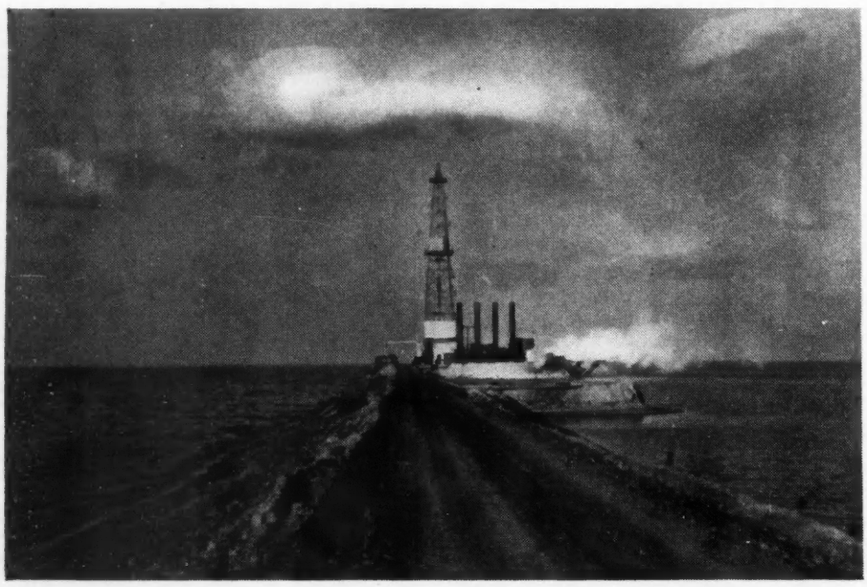
Operators producing from the Smith sand in the Yates pool, Pecos County, have asked for an allowable of 25 barrels for each of the 10 wells in the field. At a hearing before the Texas Railroad Commission last week, the testimony showed that the current allowable is 16 barrels a well on the schedule and is further reduced by shutdowns. Shell Pipe Line Company will accept the additional oil, if the increase is granted.

Production is found at 900 feet, and the operators have drilled one well to about 90 acres. Sand thicknesses as great as 40 feet have been recorded. All wells in the field are on the pump.

Hords Creek allowable

The Texas Railroad Commission has increased the allowable for the Hords Creek field, Goliad County, from 30 to 38 barrels daily. There is one well in the field.

California Has Inland Offshore Drilling



Inland-offshore drilling technique is called into play on Richfield Oil Company's B. V. A. 81-36, San Joaquin Valley wildcat in Buena Vista lake, a few miles east of California's famous old Lakeview gusher that made production history in 1910. The well was drilling below 9200 feet at latest reports, opinion being that production, if any, will be found at a considerably greater depth. The rig rests on earth fill built up from the lake's bottom.

Control

Federal control investigators cut short New Orleans hearing

The Cole subcommittee from the House of Representatives that is currently investigating the need for federal control of the oil industry recessed its scheduled three-day hearing in New Orleans last week after a one-day session, which permitted only E. O. Thompson and Jerry Sadler, members of the Texas Railroad Commission to voice their opposition (see story page 45) to the proposed measure. The hearing was cut short due to the death of one of the subcommittee's members, Congressman Carl Edgar Mapes. In announcing the cancelling of the remainder of the hearing, Chairman William P. Cole, Jr., declared another hearing would be schedu'ed to obtain testimony from state officials that did not get to appear. This probably will be held in Washington after Congress convenes, when oil industry representatives also are scheduled to appear.

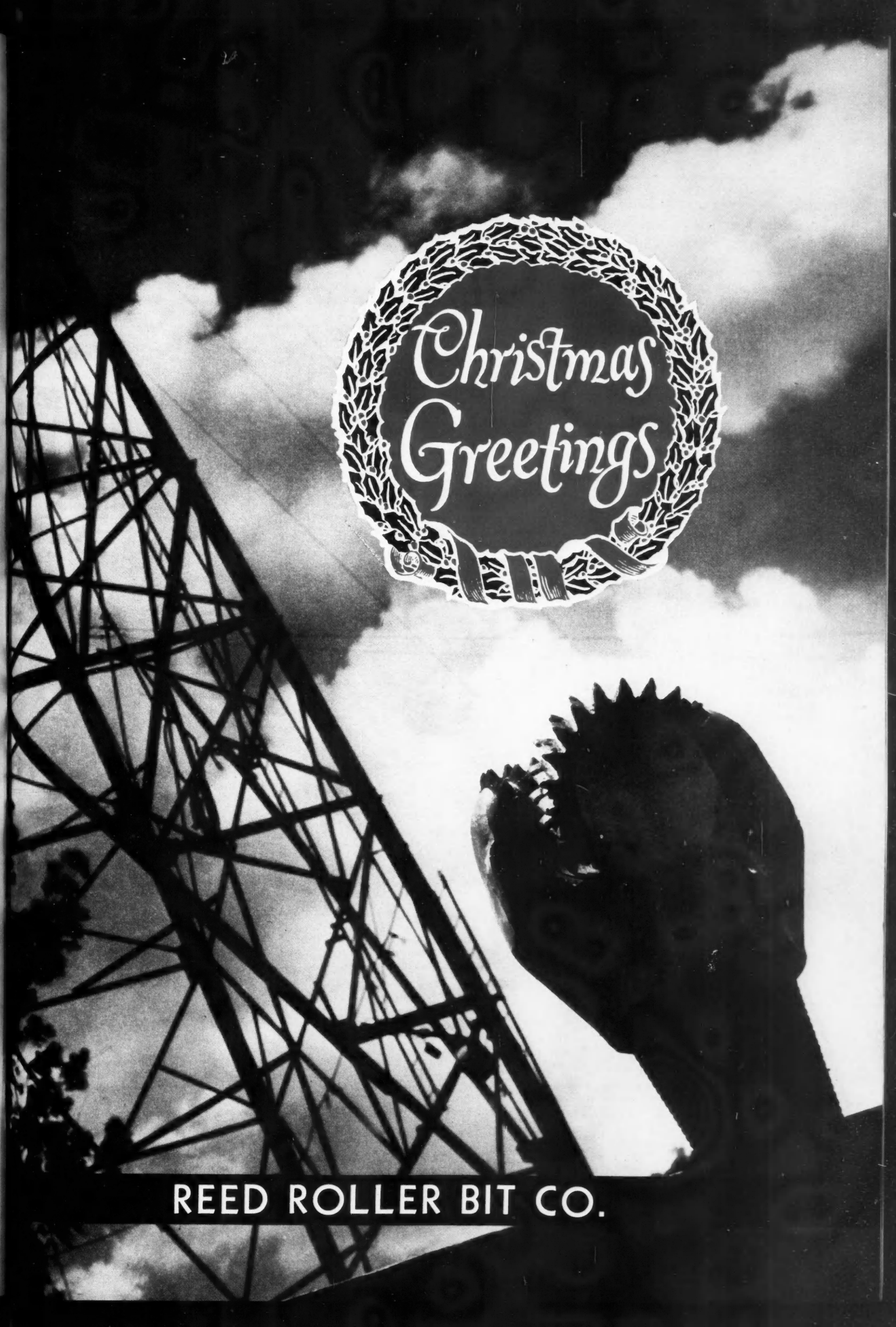
The testimony heard by the subcommittee at New Orleans condemned any legislation of the nature of the contemplated Cole bill, but was generally disappointing to the observers from the industry present because of the failure to cite more specific objections and reasons for such views.

Both Thompson and Sadler declared there was no need for federal control, as reserves were increasing and the states were doing a good job of conserving the nation's oil supply. Both also made known their fear that any such law would mark the end of state sovereignty.

Representative William P. Cole, Jr., oil subcommittee chairman, and Representatives Edward A. Kelly, Charles A. Wolverton and Herron Pearson, members of the subcommittee, who came to Grand Rapids, Michigan, Wednesday with the body of Representative Carl Mapes, spent the forenoon of December 14 touring the Walker-Wyoming oil field just west of the city. Cole and other members of the subcommittee left Grand Rapids for their homes immediately after the funeral Thursday afternoon. Cole said Mapes had frequently cited the benefits of state proration in reference to the Walker-Wyoming field, first large field developed in Michigan after the state enacted its conservation measure in 1939.

Two more oil trade groups oppose control

Two additional oil trade associations went on record last week as opposing the proposed federal control act for the industry. These were the West Central Texas Oil & Gas Association and the San Joaquin Oil Producers Association (see stories page 61). Both organizations voiced strong opposition, and the latter group also adopted a resolution requesting President Roosevelt to withdraw his approval of the Venezuelan oil import tax reduction, and requested Congress to enact laws to prevent recurrence of such agreements.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Trade Treaty

Mexico gets small share under Venezuela tariff cut

Importations of crude oil from Mexico which will receive the benefit of the reduction in the import excise tax granted in the reciprocal trade agreement with Venezuela which became effective December 16 will be held approximately at their previous level under quotas announced by the State Department December 12.

Imposition of a "ceiling" on entries of Mexican oil, a penalty for expropriation of American oil properties, was accomplished in a proclamation signed by President Roosevelt, allocating to various producing countries the share which they are to enjoy of the quota-limited imports of crude, topped crude and fuel oil and gas oil which, under the Venezuelan treaty, will be permitted entry at an excise-tax rate of 10½ cents per barrel instead of the 21 cents per barrel heretofore imposed.

Because Netherlands, Colombia, Mexico, Peru and other oil-producing countries enjoy most-favored-nation treatment under treaties with the United States, it was necessary to extend to them participation in the lower tax rate accorded Venezuela but, by selecting the period on which the allocation was to be based, it was possible to keep the benefit to Mexico at a minimum.

Under the Venezuelan agreement, the rate of excise tax is halved on imports to a quantity equal to 5 percent of the total refined in the United States during the preceding calendar year. On the basis of 1938 refining, 5 percent would be 58,251,000 barrels for 1939, but on the basis of the much higher refining activity of the current year the 1940 quota may be nearer 62,000,000 barrels.

Venezuela Gets Largest Quota

For the final two weeks of the calendar year, the president's proclamation provided that the quota should be divided among the several countries from which oil is imported on the basis of 71.9 percent to Venezuela, 20.3 percent to the Netherlands, 4 percent to Colombia and 3.8 percent to "other foreign countries," in which is included Mexico.

These percentages, it was explained, are based on the proportionate share of total imports provided by those countries during the first 10 months of 1939. By adopting that period, rather than an earlier or a longer period running back to before the Mexican expropriation, it was possible to limit Mexico's benefit from the tax cut to a minimum.

May Double Imports

Since imports of crude during the 10 months ended with October were but 23,364,000 barrels and during the past five years have averaged only 34,000,000 barrels a year for all items included in the tax reduction, it will be possible almost to double imports next year but even that, on the basis of a 60,000,000-barrel quota, would permit the entry of only some 2,280,000 barrels from Mexico.

It is understood that, for a time at least, allocations to the various oil-producing countries will be made on a month-to-month basis. Thus, there is extended to Mexico indirectly an invitation to settle its controversy with the American oil companies whose properties it expropriated, with the possibility that the reaching of an agreement will influence a revision of the allocations more in keeping with its importance as a producing nation.

Meanwhile, by including Mexico in the general grouping of "other" countries, the United States leaves the way clear for importations of oil from Peru at the lower tax rate, should any such oil be offered, although no imports have been received from that country for some time.

Independents start battle to rescind import tax cut

With memories still acute as to the effect of imported oil upon the domestic oil industry, independent producers have begun their campaign to have rescinded that part of the recently announced trade agreement with Venezuela which cuts in half the excise taxes on crude oil and fuel oil brought in from foreign fields.

Principal imports in recent years have been from Venezuela. The trade agreement effective December 16 reduces the tax on crude oil and fuel oil from one-half cent per gallon, which has prevailed since 1932, to one-fourth cent.

The tax was levied by Congress after the Independent Petroleum Association of America had conducted a three-year fight for protection from the cheaply produced oil from foreign fields. The effect was immediate and substantial. At the time the tax was imposed, imports amounted to approximately 13 percent of national demand; since the middle of 1932 they have been near the four and one-half percent figure.

The Independent association, again leading the fight for protection of the domestic industry, contends that Congress did not give the executive department of the federal government the authority to alter excise taxes. Several members of Congress have looked up the record and have asserted that it was the plain intent to limit trade agreement negotiations to items on the tariff schedule. The oil import tax comes within a special classification.

Hague may be called on to rule on oil expropriation

Mexico City circles described as usually well informed are quoted as saying there is a possibility American oil companies whose properties were expropriated by Mexico might attempt to have the controversy submitted to the permanent court of international justice at The Hague.

In case of international arbitration, it is felt in these circles that the matter might not come within the scope of any existing Pan-American accord because interests of Great Britain and the Netherlands are involved.

Courts

Seek to delay Texas lease sale

Suit was filed in 126th District Court in Austin Friday seeking to enjoin the sale of state lands for January 2, at Austin. Hearing on the case has been set for December 28.

J. F. Hair, attorney who filed the case, asked that the sale be delayed until the property can be appraised properly. He alleged that some of the land is very rich, worth far more than the minimum values set, and that this is known to certain oil companies. R. L. Sanderford of Wichita Falls, was named plaintiff in the suit.

Supreme Court may review anti-trust action against Ethyl

The United States Supreme Court last week held that it has "probable jurisdiction" to review a lower court decision in the government's anti-trust suit against the Ethyl Gasoline Corporation, in which are raised a number of the questions which the Department of Justice, a day earlier, had said would be studied in connection with its proposed grand jury investigation of the alleged misuse of patents for monopolistic purposes.

The major question upon which the court is expected to pass is whether a patent owner, under his constitutional rights, can, in view of the prohibitions of the anti-trust laws, license a particular group to sell his product. The case came to Washington on appeal from a final decree of the District Court for the Southern District of New York.

The New York court refused to find for the government upon its first contention that jobber licenses issued by the company had been used for price maintenance, but did find for the government that jobbers who had been denied licenses were excluded from dealing in the patented article in violation of the Sherman Act.

"By its decree, the District Court swept away any system of jobber licenses whatever," the Supreme Court was told in a brief filed by counsel for the company. "In so doing the district court treated the case as though the defendant corporation owned merely a patent on the lead-treated fuel.

"It overlooked the fact that the defendant corporation, by reason of its patents on the lead-treated fuel and on the use of this fuel, had the right to select those through whom such patented fuel might be sold to the public. The decree abrogates this right under any and all circumstances."

The brief contended that the decree renders it impossible for the company to protect its valuable "Ethyl" trade mark, destroys much of the value of the patent on the fuel and virtually renders valueless its patent on the use of the fuel. It was also claimed the decision substantially limits the rights of a patentee in determining to whom the patented products may be sold, and fails to recognize the right of the owner of a trade mark to protect himself against impairment of the good will which it represents.

Investigators Hear Texans Condemn Federal Control

Death of Congressman Carl Edgar Mapes early December 12 cut short the scheduled three-day hearing of the Cole Investigating Committee in New Orleans, with the result that only anti-federal control testimony on Texas was presented.

Prior to leaving for Grand Rapids, Michigan, to attend funeral services for Mapes, who had taken an active part in the questioning Monday, Congressman William P. Cole, Jr., of Maryland, chairman of the committee and author of the proposed bill, announced another hearing would be scheduled to obtain testimony from Louisiana, Oklahoma, Mississippi, Kansas, Arkansas, New Mexico, California, Michigan, and Colorado. This probably will not take place until after Congress reconvenes.

In explaining the purpose of the meeting, Cole declared the federal government contends the states are not preventing petroleum waste as they should, but in fairness to the states the committee had decided to hear them.

Cole stated that the measure does not mean federal regulation of the industry in the strict sense of the word. He said that the federal government merely contemplated setting up a formula for regulation, but that actual regulation of the oil industry would be in the hands of the states.

Thompson on Stand

Monday's sessions, devoted exclusively to testimony presented by Col. Ernest O. Thompson, chairman of the Interstate Oil Compact Commission and a member of the Texas Railroad Commission, and that of Jerry Sadler, also a member of the Texas Railroad Commission, closed with an expression from Representative Charles A. Wolverton that "the testimony and opinion expressed in the morning and afternoon sessions, while generally condemning legislation with a tenor similar to that of the contemplated Cole bill, did not cite specifically any objections to such legislation."

Thompson, whose address and cross-examination consumed the morning and part of the afternoon, climaxed his disapproval of anything resembling federal control of the oil industry with the following observations:

"Reserves of oil are being steadily built up.

"The consumer is getting a constantly improved product at a constantly reduced price.

"The states are working in harmony.

"Production is in balance with consumption.

"Overproduction has been stopped and waste is being increasingly prevented.

"I submit that it is better that we get the job of oil conservation done by the states themselves than to further centralize our government in Washington.

"I do not admit that the federal government could do a better job. In fact, I firmly believe the federal government could not do any better job than has been done by the states.

"By granting, for the sake of argument only, that it could do a better job, I strongly believe it is far better to stay by the American form of government and keep our control close at home where the people can have a more direct and responsive control over their state resources than to turn them over to some government bureau far removed from the people."

Thompson's statements, while representing neither the Texas commission nor the interstate body officially, were concurred in by Lon Smith, Texas Railroad Commission member who was unable to attend the hearing due to a sprained ankle.

Cites Texas Reserve Increase

In illustrating how the Texas oil industry had thrived without federal control, Thompson explained that reserves of the state had increased to 9 billion barrels, almost double the estimated figure in 1934. He gave the state credit for almost 89,000 wells and 522 fields. Average production per well in the state is about 13 barrels per day, he said. Without interference from Washington, he explained, the Texas industry had grown to where it boasted of no unconnected wells, of 57,696 miles of oil pipe lines, of 10,165 miles of gas pipe lines, and of 116 refineries with a daily aggregate capacity of 1,720,094 barrels. Average daily pipe line traffic, the colonel pointed out, amounts to 1,848,000 barrels in Texas.

After Thompson told of what an excellent job the regulatory body in Texas was doing for conservation, Congressman Carl E. Mapes of Michigan was able to elicit from him a statement to the effect that the average railroad commission engineer stays on the pay roll about 11 months. "As soon as they get good, they are taken away from us by people willing to pay higher salaries," Thompson declared.

"I am surprised," countered Mapes, "that such responsible work as determining what production should be can be performed by men with such little experience."

"Well," replied the colonel, "We're getting the job done in a manner of which we may be justly proud and we aren't shouting to anybody for help."

Edward A. Kelly, committee member from Illinois, asked Thompson:

"What effect do other states without oil production control legislation have on the welfare of the oil industry in states which do have such statutes?"

"I have no kick at all about Illinois," Thompson answered. "In time that situation will take care of itself. But while it lasts it makes for competition between the states, which is a desirable, healthy thing." It is not wrong for Illinois to produce more and more oil as long as her market is absorbing that oil, he inferred, and continued with the observation that the same holds true for Michigan.

The colonel refused to make a definite answer to the question by Lyle H. Boren, congressman from Seminole, Oklahoma, when asked whether he did not think states should legally require that gas brought to the surface be introduced back into formation. Thompson's opinion on the matter seemed to be that business horse sense would let an operator know whether such a practice were economically sound. He explained, moreover, that the local conditions which might indicate such a practice for one area might in another render the return of gas to the formation as a waste of money.

At this point in Thompson's cross-examination, Mapes stated: "I think it is only fair to Secretary Ickes to quote him as saying that he favored state laws for conservation of oil and gas and that federal laws should step in and take charge only when state laws have failed."

"But," countered Thompson, "in the event opinion was divided as to whether federal or state opinion was right on a given ailment or condition of the industry, who would have the power to decide which was right?"

"The federal government," Mapes replied.

"Then it would be just one or a few more steps until state sovereignty would go out the window," said Thompson, and continued, "When you're doing good, why take medicine?"

"Would you favor creation of a federal commissioner—without authority—one that would just make studies and recommendations without the power to put them into effect?" Mapes asked Thompson.

"No. I don't even want him to get his foot in the door. If he does then he'll ask for a little authority—which will be only the beginning. It will be an entering wedge for complete federal control of the oil industry eventually."

Thompson then surprised the committee with the declaration that he thought even the Texas Railroad Commission has too much regulatory power.

"It would make very interesting reading if you would request the Texas legislature to reduce that power," Wolverton opined.

"We have repeatedly asked the legislature to limit and define our authority and power," was the retort.

Questioned on Shutdown

Referring to the 15-day shutdown of Texas wells last August, Wolverton stated, "When the shutdown was arbitrarily ordered, all the idealism was

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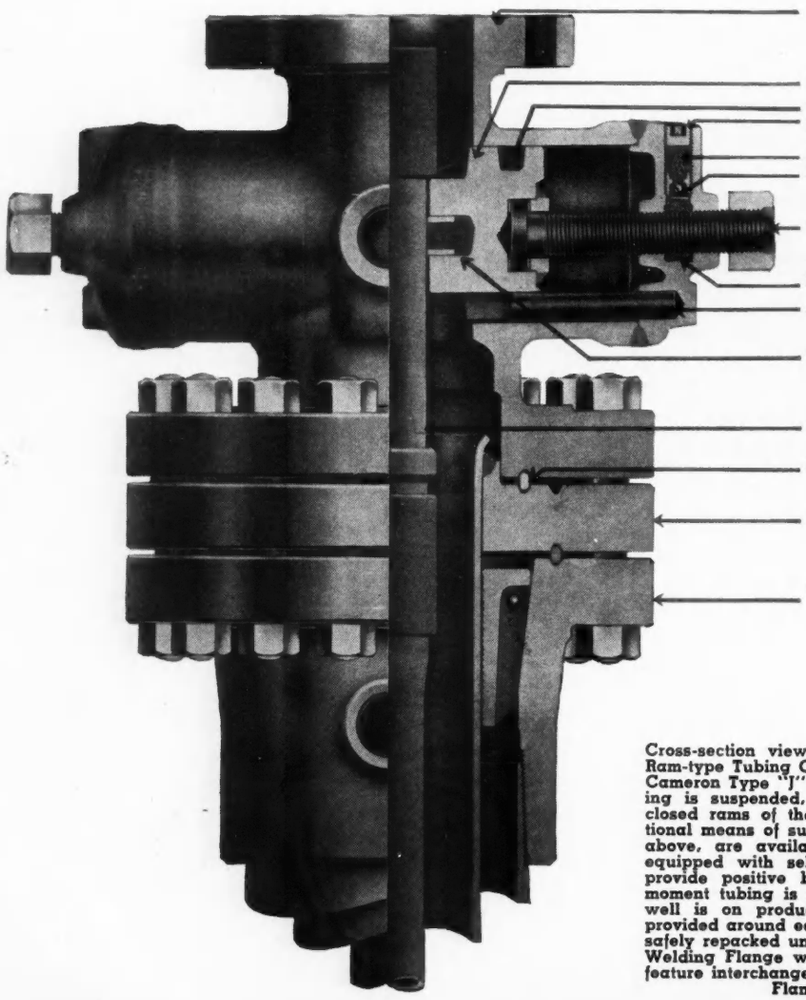

Cross-section view of a Cameron Type "LD" Ram-type Tubing Control Head flanged above a Cameron Type "J" Casing Head. Note that tubing is suspended, sealed and locked on the closed rams of the Control Head. (Two additional means of suspending tubing, as outlined above, are available, if desired.) The rams, equipped with self-feeding packing elements, provide positive blowout protection from the moment tubing is started in the hole until the well is on production. Plastic packing seals provided around each ram thrust screw may be safely repacked under pressure. The Type "M" Welding Flange with plastic packing test-weld feature interchanges with the Type "J" Welding Flange illustrated.

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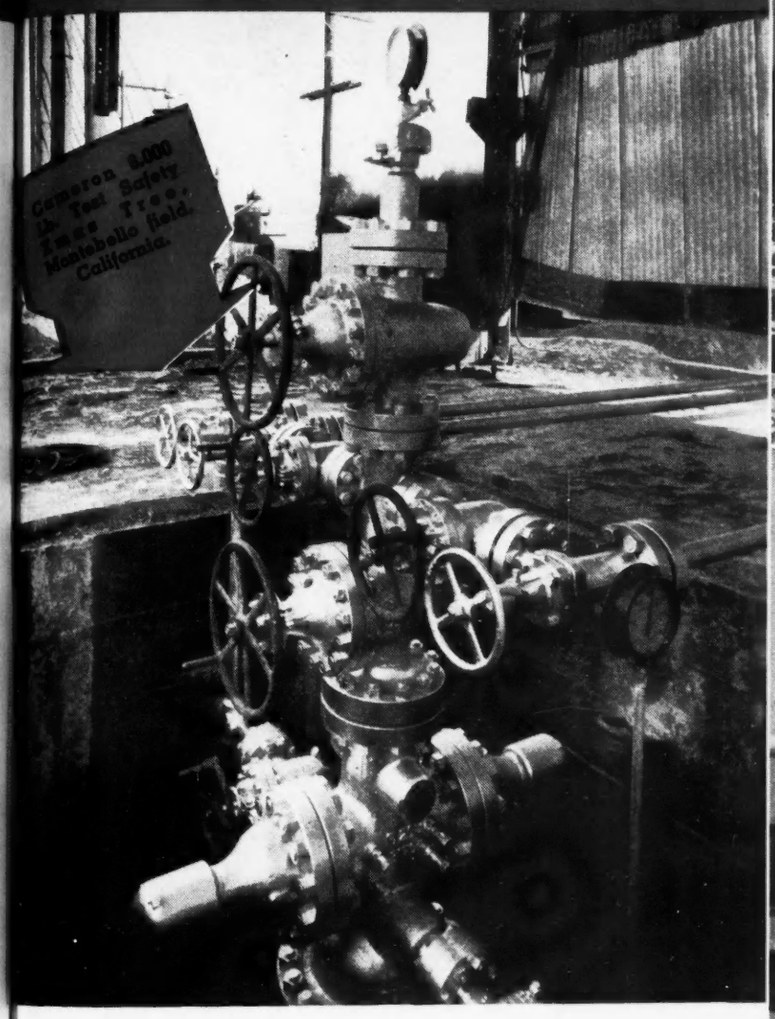

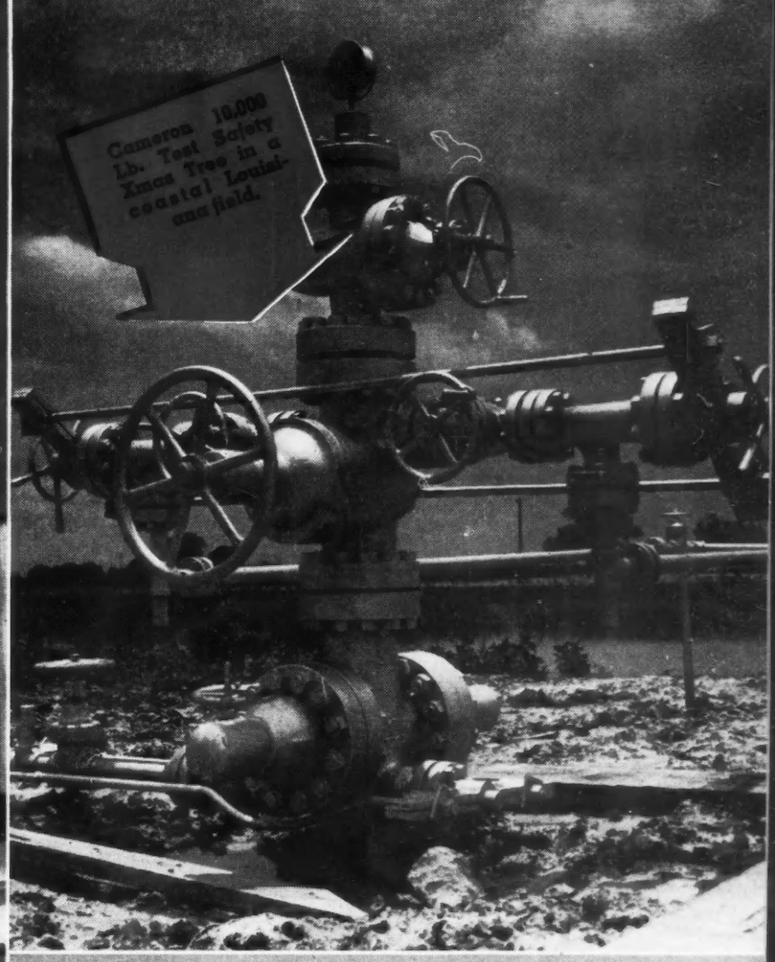

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stripped from the conservation act and it became a means for stabilization of price. The shutdown of the wells was ordered without regard to the interests of the consumer."

"I assure you that the order was to protect the stripper wells and nothing else," Thompson replied.

Wolverton held the shutdown order was issued in the face of a price reduction. He contended that stabilization of price through powers given state regulatory bodies by conservation acts could work to the disadvantage of the consumer.

Thompson countered with the argument continued operation of the stripper wells was necessary to conservation as they would go to water if shut in. These stripper wells could not operate at a profit under a severe price cut, he said, and continued that price stabilization was necessary to keep them going and thus obtain maximum recoverable oil.

From cross examination of the witness, Wolverton was able to leave with the audience the impression that the shutdown order was issued without the commission's having held a meeting of the operators to obtain evidence which would have justified issuance of the order.

Cole took the witness in an effort to establish that the Interstate Oil Compact Commission, the work of which Thompson had lauded, never made a definite recommendation toward control legislation to any state. Thompson explained that while the compact group had not actually written letters to various legislatures saying in effect, "We, the compact, recommend that you pass such and such laws," it had indirectly made recommendations through publication of proceedings of the compact and through allowing representatives of the states to sit in at meetings where progress reports were given on this and that area.

"Why does Texas support a conservation law that is only a temporary measure?" Cole asked.

"Because the oil industry is an ever-changing one and it is easier to keep the law up-to-date with requirements by amending it every two years."

On the subject of spacing, Thompson testified that spacing of wells in an oil field has very little to do with conservation of oil. "It is more a matter of conservation of money. Close spacing gets more oil from the ground, but the industry wants as much oil as it can get with as little cost as possible."

The matter of oil reserves for military needs was dealt with briefly. Thompson held that if the government wants oil for defense, Congress should appropriate money to buy reserves, as it did in the case of helium.

Doubts Constitutionality

"I question the constitutionality of that phase of the Cole bill which would give the federal government police powers over the oil industry, powers that would carry more authority than corresponding powers of the sovereign states," Thompson declared. He added that if the bill is passed by Congress, Texas proposes to fight it in the courts.

"As a matter of fact, he informed the committee, we are working up a brief on the constitutionality of the Cole bill right now and that work is almost complete."

"Why would not it be satisfactory to have federal control of the oil business?" Wolverton asked Thompson.

"Control of oil would be just a step toward control of coal, wool, mohair, cotton and all business," Thompson answered.

Sadler "Agin' It"

Jerry Sadler, who next appeared, said that his opposition to a measure of that sort dated back to when the first federal control bill was introduced in 1934.

"Since I can recall," he said, "the oil business has faced a 'crisis' each year, and the favorite cry of 'federal control' has been heard with marked regularity nearly every 12 months for many years past. That threat alone has brought enough excitement and bedlam to make any industry shudder and wonder if it is worth the price to go ahead and make investments.

"However, through some strange medium the industry has managed to get along, and at the end of the year the balance sheets, as a whole, have shown a substantial profit—a healthy profit which has prevented many states from becoming so far in debt that they would have never seen daylight again. Almost as a certainty, as soon as these accountings have been made, the cry of 'federal control' has abated, and conditions have gone along smoothly, until another upheaval of government interference shoots forth.

"It appears passing strange that at this particular time, when so much is hanging fire over the oil industry, that the Department of the Interior would spontaneously take the notion of inaugurating radio broadcasts to picture the allegedly chaotic condition of the

MAPES DEATH HALTS CURRENT COLE INVESTIGATION

The sudden death in New Orleans December 12 of Representative Carl E. Mapes of Michigan, halting the hearings on the Cole oil control bill, was seen in Washington as depriving two important House committees of a stabilizing influence respected by political friends and foes alike.

As ranking minority member of the dominating Rules Committee and head of the Republican contingent of the House Interstate Commerce Committee, Mapes to considerable extent determined the course his fellow Republicans took on major issues.

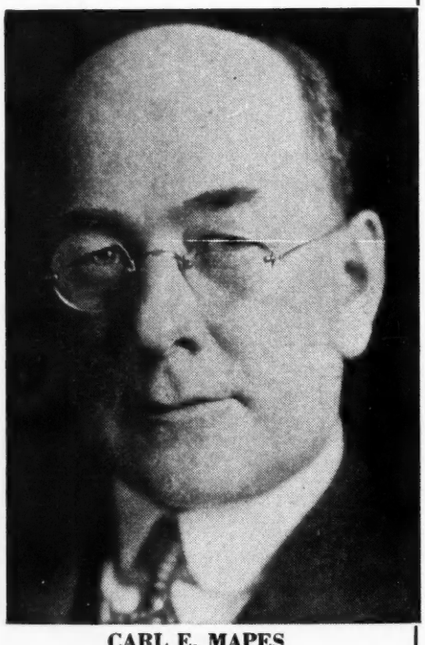
He had been a member of Congress for 27 years, entering the House on March 4, 1913, with the inauguration of President Wilson. When the Republicans came into office, he became chairman of the District of Columbia Committee, resigning that position to accept a place on the Interstate and Foreign Commerce Committee.

As a member of the Interstate Commerce Committee, the Michigan Congressman devoted considerable time and study to the problems of the oil industry, being a member of the "Cole subcommittee" which in 1934 made a thorough investigation of the oil situation, an investigation which the group was bringing up to date at the time of his death.

Conservative by nature, he had never supported New Deal ideas as to federal control of industry, but nevertheless gave the subject a great deal of attention when it came up in Congress and took an active part in hearings on the question, where his training as a lawyer and experience as prosecuting attorney of Kent County, Michigan, was called into play in the interrogation of witnesses, subjecting government officials and private citizens alike to searching inquiry.

Mapes was born in Kalamo Township, Eaton County, Michigan, December 26, 1874, attended Olivet College and was graduated in law at the University of Michigan. In addition to being prosecuting attorney of Kent County, he served three terms in the Michigan legislature before going to Washington.

His death leaves Representative Charles A. Wolverton of New Jersey as ranking member of the Interstate Commerce Committee. Wolverton, however, already is a member of the oil subcommittee, so that it is possible that Congressman James Wolfenden of Pennsylvania, next in rank among the minority, may be appointed to fill the vacancy.



CARL E. MAPES

petroleum business. To those who are acquainted with the industry, these broadcasts have struck a responsive chord—responsive in the sense of vehement disapproval.

Sadler then took up the torch for the independent operator and against any further serious reductions allowables that would increase the payout term on a well to an unreasonable length.

"The independent operator must prosper or monopolies will result from larger company domination. With large amounts of capital at their disposal, major companies could take over control of independents were a system of production instituted that would extend oil payouts over a greater period than now allowed. That would place the business on the basis of the man having the most money lasting the longest and would eventually mean destruction for the independent," Sadler told the committee.

"I do not believe," Sadler continued, "that any one or two or three or four or eighteen are capable of regulating the nation's gigantic oil industry. Texas has gone to great expense to bring about proration to its oil business. Now the Cole bill proposes to duplicate this work of more than half a dozen years and to take practically every regulatory power which the state possesses.

"It has been said that under the Cole bill there would be points of difference which would arise between the state and federal authorities as to certain problems. It is further stated that these differences would likely be numerous during the early workings of the Cole bill, but that as time would pass such friction would materially decrease. Under the measure, it is provided that federal authority would prevail over state opinion. With this in mind, it is easy to see the reason for the decrease in federal and state difficulties. Affairs would reach such a point that state authorities would cease to protest or giving up state's rights would there be butting their heads against a brick wall," Sadler told the committee.

"I am sure you remember the days of government operation of railroads during the World War. I don't believe that you could call the job entirely successful. Today the government has been forced to dole out large sums of money so that rails may continue operating. You are also aware of the plight of the farmer. That same condition could come about in the oil industry—an industry which has asked no quarter, but which turns in millions of dollars annually for federal, state and local governmental disposal.

"Why destroy the goose that lays the golden egg?" Sadler asked the committee. He continued, "Do you recall any other industry which enjoys the sound financial status which the oil business does?" and answered "I don't."

Congressman Mapes inferred he understood Sadler differed with Thompson on the Cole bill, to which Sadler replied, "I can't see that we differ at all; we're both agin it."

General sentiment of those at the hearing was strong opposition to anything resembling the Cole bill. However, it was not unanimous.

One man said he could not see any difference between exercise of power by a federal bureau and exercise of that same power by a state body.

Another stated there might be a certain advantage in having things run from Washington in that men remote from the center of operations might be less subject to local prejudices.

Ellwood Fouts Houston attorney, speaking of the Cole bill, declared:

"I am opposed to this or any type of legislation which to the slightest extent turns over to the wasteful politicians of Washington any type of voice in or control of oil. An examination of the record of federal administration of Indian lands, railroads, the coal industry, etc., show this more costly and less helpful than the constituted exercise of such powers by the states."

Jack Blalock, Houston, stated: "Absolutely no necessity exists for passage of this type of legislation. In addition, the proposed bill is unconstitutional. By its terms it permits the federal government to control production within the bounds of the states. This is exclusively the prerogative of the states."

O. C. Bailey, chairman of the Arkansas Oil & Gas Commission, was prepared to tell the committee that he could see no benefit to be gained by added federal legislation, since, so far as Arkansas is concerned, avoidable waste is being prevented, sound engineering principles are employed in the administration of the state statute toward the ultimate recovery of oil and gas reserves, and the rights of the sovereign, land owner and royalty owner are fully protected.

In dealing with the gas fields of western Arkansas, Bailey was prepared to tell the committee: "Only about 3 billion cubic feet of gas is being produced from these reserves annually. There is no oil or distillate with these deposits. To my knowledge there has never been any serious attempt toward the setting of production quotas for these fields, nor has there been any litigation relative to the waste of gas."

Bailey places the gas reserve of western Arkansas at 84 billion cubic feet. Current crude reserves of the state he estimates to be 300,000,000 barrels, of which 70,000,000 barrels is in settled fields and 230,000,000 barrels in flowing fields.

He was going to testify to the committee that since January 1, 1937, Arkansas crude reserves have increased 209,000,000 barrels, or 230 percent, and that allowed production is only 8.5 percent of reserves yearly.

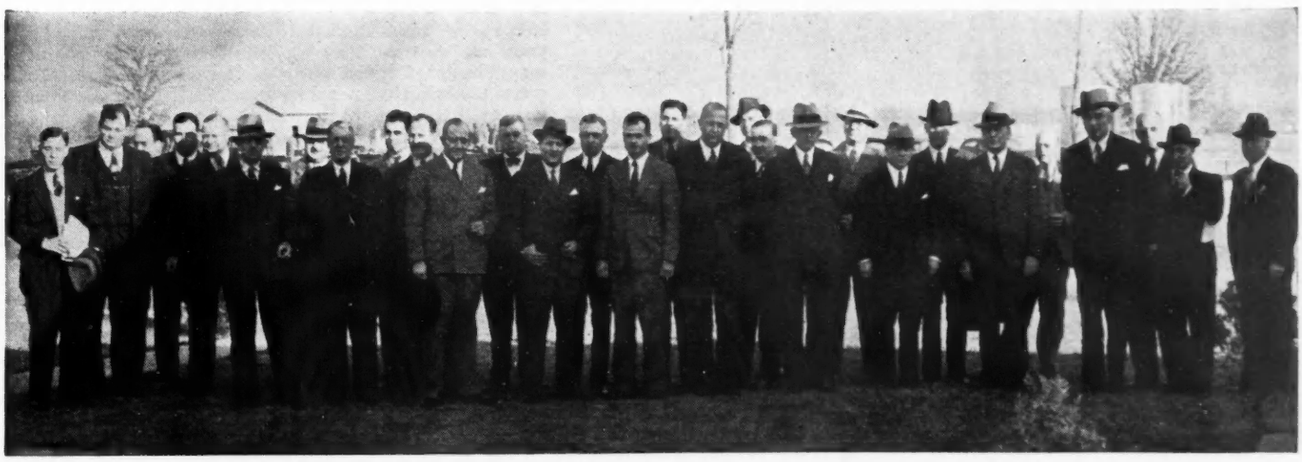
Members of the California delegation, which did not get an opportunity to present testimony at the meeting, invited the Cole Committee to California to make a study of the control situation there.

B. E. Ahlport, personal representative of the governor of California, said the state's oil fraternity would join the governor in preparing all the testimony the committee may need for its investigation.

Mississippi's stand on regulation of production was voiced by Governor-Elect Paul B. Johnson, who likewise was prohibited from testifying. He promised a real conservation law, one which would be framed by taking the better portions out of the existing laws of Arkansas, Louisiana and Texas.

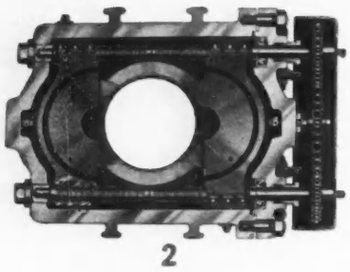
"We have a conservation law now, but it does not provide for setting allowables for oil production," Johnson said. "Production of oil will be regulated to conserve our resources.

"There is no need for proration yet," he continued, "for we have only one oil field. But we will include powers of proration in the new law because we think other fields will be found in Mississippi."



All interests and groups comprising the production branch of Illinois oil industry were in the party that toured state fields a week ago Friday and Saturday with members of the Cole investigating committee. This picture was taken at The Pure Oil Company's Travis camp near Clay City.

IT'S SHAFFER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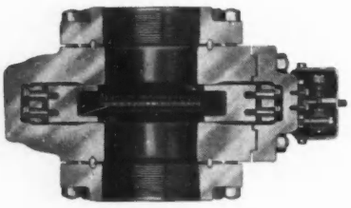
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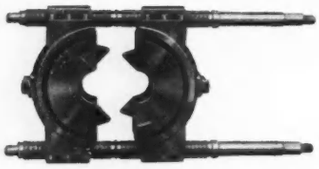
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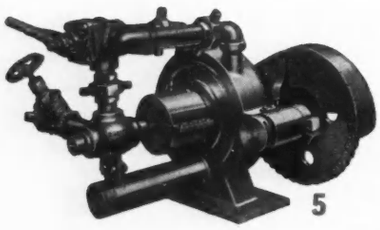
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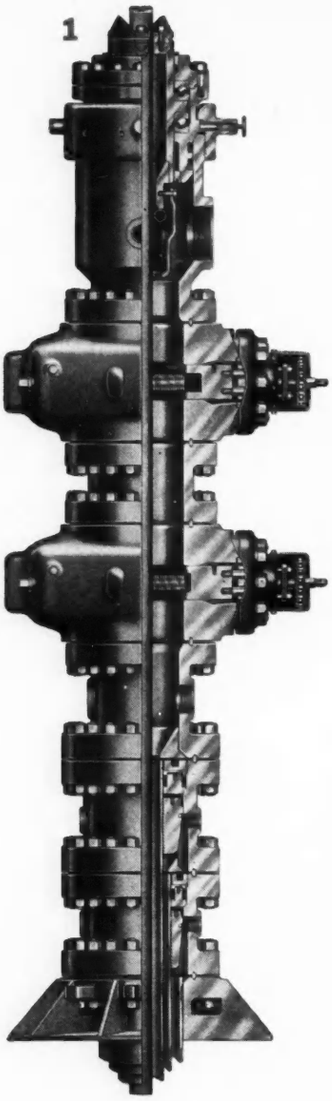
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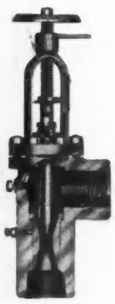
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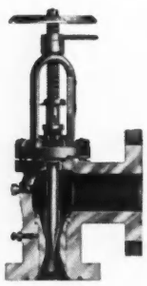
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Modernized, streamlined, and with increased strength, Shaffer High Pressure Drilling Equipment is ready to make your 1940 operations more convenient, more economical and safer than ever before.

Only after years of Pioneering, Engineering Development and Field Proving is it possible to combine all the outstanding advantages which you will find in Shaffer Safety Hook-Ups.

Before you make any further plans for your 1940 operations it will pay you well to study the Shaffer Section in the 1940 Composite Catalog, or to get a copy of the separate Shaffer Catalog, soon off the press. We solicit your inquiries on all pressure drilling problems. The suggestions of the Shaffer Engineering Staff are founded on the experience gained through years of designing equipment for controlling pressure—and the Pioneers of the years just past are the unquestioned Leaders of today.

SHAFFER SAFETY HOOK-UPS

Shaffer High Pressure Drilling Equipment is available to meet any drilling condition, and by proper planning it is possible to combine economy, maximum efficiency and complete safety. The modern hook-up (1) shows how a one-size hook-up can be used from start to finish of a well where high pressure is likely to be encountered. A Shaffer Combination Rotating Blow-Out Preventer and Stripper is used above two Shaffer Type 38 Cellar Control Gates, the upper gate being equipped with rams for closing around the drill pipe. The lower gate is equipped with rams for a complete shut-off. This hook-up is ideal for wildcat wells or in remote areas where transportation of equipment is difficult.

With the casing program determined, or the number of strings of casing anticipated, the proper number of Shaffer Full Opening Spool Type Landing Heads are installed, and by merely adding guides of the proper size, when required, the drilling connections never need be changed in size or length.

The modern and efficient design of Shaffer Type 38 Cellar Control Gates is illustrated in views (2) and (3) where the positive method of sealing by the ram rubbers is shown; also the large, strong operating screws which bring the rams smoothly and evenly to the sealing-off position. A new effortless method of closing and opening any Shaffer Control Gate is the Shaffer Gate Closing Engine (5) which operates from the steam line and closes one or more gates with a speed never before possible.

Shaffer Self Centering Rams have been developed to meet the problem of centering small diameter drill pipe so that it is in proper alignment with the rams in larger bore Shaffer Cellar Control Gates. Protruding angular guides (see 4) engage the drill pipe and move it into a centralized position as the rams are closed. The guides telescope into the

LOOK for the SHAFFER SECTION

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opposite ram block and permit the abutting faces of the ram blocks to seal perfectly. Self Centering Rams can be furnished for previous types of Shaffer Cellar Control Gates; details furnished upon application.

CASING EASILY LANDED

The safe landing and packing off of casing is greatly simplified when Shaffer Full Opening Spool Type Landing Heads are used. Three strings of casing are shown landed, individually suspended and packed off by illustration (9); view (12) shows the full, unobstructed opening before the casing is landed, and (13) illustrates the simple, safe method of landing and packing off.

PRODUCTION HOOK-UPS

Shaffer Production Hook-Ups can be supplied to meet any of the varied conditions present in producing oil wells and to meet the preferences of any individual operator. Even under extremely high pressure, tubing can be pulled with ease and safety. The Shaffer Universal Tubing Control Head (10) serves as a blow-out preventer while drilling in and tubing the well. The Shaffer Type 35 Tubing Head (11) shows the tapered bore with the same inside diameter as the casing which permits running tubing catchers, and serves as a spider for the slips when running tubing.

Shaffer Adjustable Flow Beans are universally used for controlling the flow of fluid and regulating the pressure and rate of flow with extreme accuracy. A popular Screw Type is shown in view (6); the same style is made with A.P.I. Ring Joint Flanges (7). Another type which retains all of the flowing qualities of Shaffer High Pressure Flow Beans, but is designed for wells of moderate pressure only (at a correspondingly reduced price) is shown in illustration (8).

SHAFFER FISHING TOOLS

The safe, positive and economical results obtained from Shaffer Fishing Tools are due in large measure to the operation of a rental tool service for many years and to the knowledge thus acquired. Operators in far away locations can depend upon any Shaffer Fishing Tool as being simple in design, sturdy in construction, positive in action, and safe in service.

The ideal tool for left-handing or backing-off the string (when drill pipe is stuck in a tight hole with the tool joint box up) is the Shaffer Expanding Pin Tap (14). It provides a connection as strong as the rest of the fishing string, and has no equal for this service.

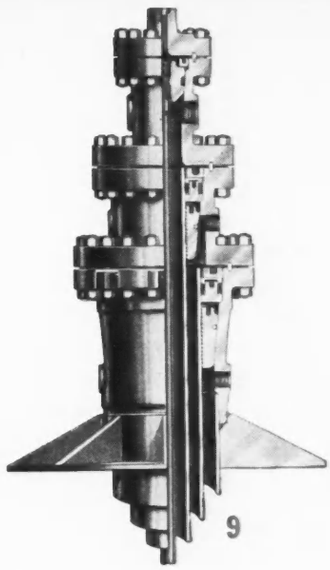
For cutting off casing, tubing or liners, the Shaffer Inside Casing Cutter (15) can be run on either drill pipe or tubing. Cuts smoothly without chattering, and is easily released and moved up or down the hole for repeated cuts.

Shaffer-Hamon Rotary Releasing Sockets are ideal for recovering drill pipe, casing, tubing or liners. This type (16) is recommended for use with right-hand tools.

Shaffer Sockets are used for recovering either loose fish or stuck fish. The Shaffer T. & T. Rotary Releasing Socket (17) is preferred with left-hand tools.

The Shaffer-Hamon Rotary Releasing Spear (18) is preferable when right-hand tools are used for removing casing or pipe; for setting liners; for holding or jarring jobs.

Shaffer Spears are the most readily releasing spears in use today. The Shaffer T. & T. Rotary Releasing Spear (19) is preferable with left-hand tools.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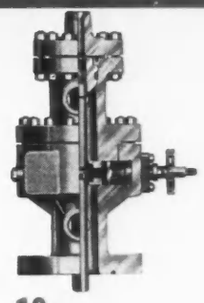
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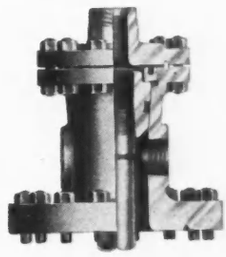
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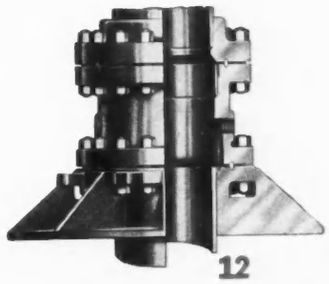
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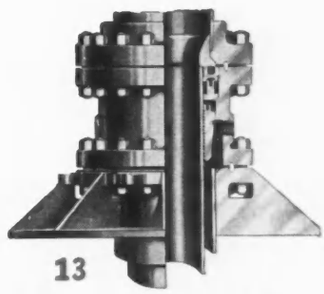
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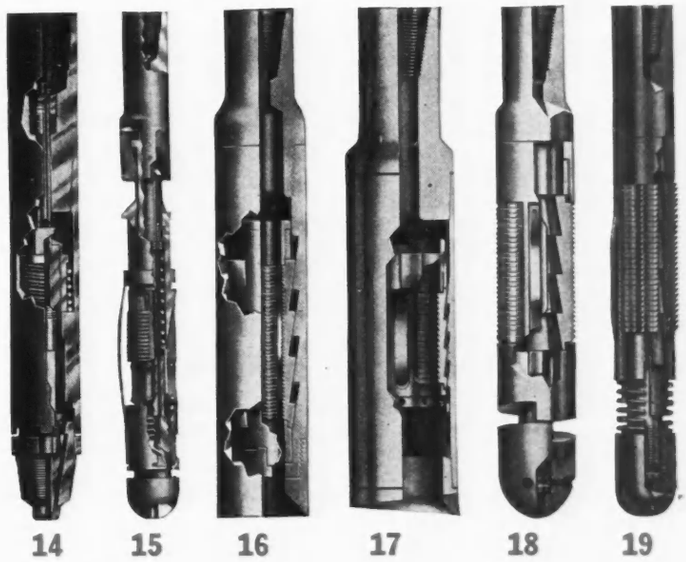
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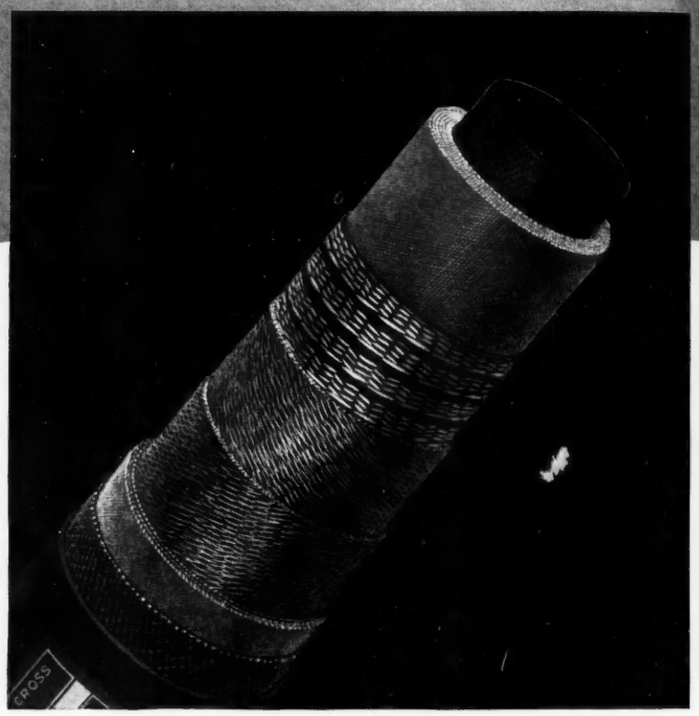

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MEN IN THE INDUSTRY'S NEWS

J. P. STRAIGHT ELECTED CHAIRMAN OF THE EAST TEXAS CHAPTER OF THE AMERICAN PETROLEUM INSTITUTE

»

E. B. MILLER, JR., BECOMES SECRETARY-TREASURER.

»

THE East Texas Chapter of the American Petroleum Institute Division of Production on December 12 elected J. P. (Jack) Straight, Cities Service Oil Company, Gladewater, chairman for the ensuing year. He succeeds R. D. Risser, Shell Oil Company, Kilgore.

Three vice chairmen were selected as follows: Robert M. Bass, Sinclair Prairie Oil Company, Troup; B. E. Moir, The Atlantic Refining Company, Longview; and Murray C. Sells, Sells Petroleum, Inc., Longview.

E. B. Miller, Jr., Tide Water Associated Oil Company, Kilgore, succeeded W. S. Morris of the East Texas Engineering Association, Kilgore, as secretary-treasurer of the chapter.

Twenty-three members were elected to the advisory committee, which is headed by the retiring chairman, R. D. Risser. Other members of the advisory committee are: M. L. Brown, Sun Oil Company, Kilgore; Albert Carter, Railroad Commission of Texas, Kilgore; C. E. Collins, The Texas Company, Turnertown; J. R. Daugherty, Arcadia Refining Company, Tyler; M. A. Finney, The Pure Oil Company, Van; C. D. Hubbard, Weaver-Crim Corporation, Laird Hill; N. N. Jones, Humble Oil & Refining Company, London; Harvey Lee, Magnolia Petroleum Company, Greggton; N. G. Moore, Empire Pipe Line Company, Gladewater.

Other members of the advisory committee include: Paul W. Morgan, Premier Refining Company, Longview; W. S. Morris, East Texas Engineering Association, Kilgore; L. P. O'Neil, General American Oil Company, Gladewater; R. H. Rancke, Jackson, Wise & Snedden, Inc., Tyler; H. P. Ross, Ross Construction Company, Tyler; John W. Russell, drilling contractor, Kilgore; C. C. Sloan, The Ohio Oil Company, Henderson; R. W. Sole, Arkansas Fuel Oil Company, Longview; J. E. Springer, Tide Water Associated Oil Company, Longview; J. W. Steele, Federal Tender Board, Kilgore; C. E. Taber, C. L. McMahon, Inc., Tyler; W. H. Wiginton, The Atlantic Refining Company, Longview; and M. E. Zoller, Central Commercial Oil Company, Kilgore.

The program committee for the coming year will consist of: John E. Murrell, Shell Oil Company, Inc., Kilgore; F. J. Mikeska, Gulf Oil Corporation, Kilgore; J. C. Randolph, The National Supply Company, Kilgore; and F. A. Schell, Jr., Stanolind Oil & Gas Company, Greggton.

A membership committee, composed of the following members, was also elected: Phil Montgomery, Halliburton Oil Well Cementing Company, Kilgore; W. H. Bowden, construction contractor, Tyler; Fred Frasher, Fox Rig & Lumber Company, Kilgore; R. T. Lewis, Hercules Motors Corporation, Kilgore; and Frank Thyng, Oil Well Supply Company, Kilgore.

J. P. STRAIGHT

DR. M. M. SLOTNICK, Humble Oil & Refining Company, addressed the Houston Geological Society December 14 on "Gravimetric and Seismic Methods in Exploratory Geophysics."

TOM HAMILTON, district production superintendent, Phillips Petroleum Company, Oklahoma City, has resigned to engage in consulting engineering. He was with the company 19 years.

HAROLD LEWIS, Roy D. Payne and Frank Forester have formed Coastal Engineering Service Company of Corpus Christi. Lewis, who holds a degree in petroleum engineering from the University of Texas, was affiliated with the Texas Railroad Commission in this district until December 1. Forester, a Texas A. & M. graduate, was also with the engineering department of the commission. Payne is a specialist in oil field accounting and commission reports.

W. N. (BUDDY) O'ROARK, Standard Oil Company of Louisiana, was reelected president of the Shreveport Oil Scouts Association for 1940 at a meeting last week. All other officers were also reelected as follows: J. T. McAteer, Gulf Refining Company, vice president; Ovid J. Robichaux, Arkansas Fuel Oil Company, secretary-treasurer; executive committee: Jake Brandt, The Texas Company, chairman; Frank Castleberry, The Atlantic Refining Company; Guy Adsit, Phillips Petroleum Company; W. H. Marshall, Union Producing Company; and Harry L. Norris, Sinclair Prairie Oil Company.

H. N. TOLAR of Southern Natural Gas Company was named president of the Mississippi Geological Society at a recent organization meeting. Other officers named are: Urban Hughes, vice president; E. N. McGlothlin, Gulf Refining Company, secretary-treasurer; L. R. McFarland, Magnolia Petroleum Company, chairman membership committee; and Pat Neholin, Sells Petroleum Company, chairman program committee. Meetings will be held the first and third Tuesdays of each month at Jackson.

JOHN V. TERRILL, Panhandle district geologist for Gulf Oil Corporation, Amarillo, has resigned to engage in consulting practice with headquarters at Midland, Texas. He has been succeeded by Elliott H. Powers, who has been on the company's West Texas geological staff.

ANTHONY FOLGER, Wichita, district geologist for Gulf Oil Corporation, Kansas, was elected president of the Kansas Geological Society. Folger has been chairman of the Kansas Nomenclature Committee. Other officers elected at the society's annual meeting are: Harold Smedley, district geologist, Skelly Oil Company, vice president; Lee H. Cornell, assistant district geologist, Stanolind Oil & Gas Company, secretary-treasurer; and John Inkster, assistant district geologist, Shell Oil Company, director for a two-year period.

JOHN FLOYD, Pure Oil Company land man from Houston, and W. A. Fagan, land man for the same company in the Corpus Christi District, are on a turkey hunt in the lower Rio Grande Valley.

WILBUR D. BACON, San Antonio oil man, has returned after a stay of about six months in the north and east.

O. A. HUFFMAN, D. B. Ferguson, Jr., and H. E. Walton last week organized the Huffman Drilling Company as an Illinois corporation with headquarters at 110 South Broadway, Salem.

WALACE HAWKINS, general counsel, and George Miller, head of the marketing division of the Magnolia Petroleum Company, Dallas, have been elected vice presidents and directors of the company and also Magnolia Pipe Line Company. Three vacancies occurred in the executive ranks of the two companies this year as result of deaths and retirements.

Miller has been connected with the marketing division since 1912. He succeeded Fred M. Lege, Jr., who died August 30, 1939, as manager of the division, and previously was manager of the distribution department.

Hawkins joined the legal department of the two companies in 1925, and was advanced to general counsel last July as result of the retirement of William H. Francis.

MELVIN W. CAMPBELL, assistant landman in the Southwestern Division for Sun Oil Company, has been transferred from Dallas to Jackson, Mississippi, where he will have charge of the company's lease activities. D. J. Munroe, Mississippi district geologist for the company, is changing headquarters from Hattiesburg to Jackson, and Samuel M. Vauclain, III, has been added to the scouting staff. George Dunlap, petroleum engineer and geologist formerly stationed in the East Texas field, has succeeded Campbell at Dallas.

E. L. DeGOLYER has been named to the board of directors of the First National Bank in Dallas. DeGolyer was the recipient of the Texas Mid-Continent Oil and Gas Association's distinguished service award for 1939, the recipient of the Anthony F. Lucas medal given by the American Petroleum Institute, and recently was appointed to the faculty of the University of Texas School of Geology.

A. A. NICHOLSON, personnel director of The Texas Company, addressed the Houston Rotary Club on December 14 on "Relationship Between Policies and Public Opinion." Nichoson devotes a large part of his time to acquainting civic organizations with the essentials of industrial relations and has traveled many thousands of miles over the country to that end.

DR. A. J. CARLSON, petroleum engineering department of the University of California, who is on a six months leave of absence is touring the Mid-Continent oil fields. Last week he was in Houston looking over the Gulf Coast area.

M. M. KORNFELD, Houston consulting geologist, was guest speaker at the December meeting of the South Louisiana Geological Society at Lake Charles December 12. His topic was "The Relation of the Hackberry Zone to Oil and Gas in the Gulf Coast." A similar paper was delivered before the Houston Geological Society November 16.

EARL GRIFFIN, West Texas superintendent of production for Phillips Petroleum Company, has been transferred from Odessa to Oklahoma City to become district superintendent, succeeding J. T. Hamilton, who has resigned. M. L. Atkinson, former superintendent at Seminole, Oklahoma, has been designated to fill the vacancy at Odessa.

J. C. FOWLER, West Texas representative of the S. J. Brendel Interests of Pittsburgh, joint owner of producing properties, has been transferred from San Angelo to Cleveland, Ohio.

A. C. WILSON, J. B. Price and D. G. Lord have organized the White Oil Corporation, with headquarters at 112 South Walnut Street, Carmi, Illinois.

Lester M. Goldsmith Presented A. S. M. E. Medal

Harte Cooke (right), chairman of the Board of Awards of the American Society of Mechanical Engineers, presents Lester M. Goldsmith, chief engineer of The Atlantic Refining Company, with the society's Melville medal at the annual dinner of the society held in Philadelphia on December 6. The Melville medal for original work is awarded annually by the society for the best original paper on any mechanical engineering subject presented to the society for discussion and publication. The medal was awarded to Goldsmith in recognition of his paper on "The High Pressure—High Temperature Turbine Electric Steamship, The 'J. W. Van Dyke'"—the 18,100-ton welded oil carrier added to The Atlantic Refining Company's fleet in 1938.

Texas Gulf Minerals moves offices to Corpus Christi

Texas Gulf Minerals Corporation, formerly located at San Antonio, has moved offices to 626 Nixon Building, Corpus Christi. Officers of the company include W. D. Fleming of Corpus Christi, president; Marshall Eskridge of San Antonio, vice president; Alden T. Shotwell of Monroe, La., treasurer; and D. M. Leopold of Corpus Christi, secretary. Directors are Eskridge, Shotwell and Fleming.

Kepley Production Company of Corpus Christi has been employed to manage and operate the company's properties in Saxet field.

Texas state land lease awards are announced

The State School Land Board has announced awards to the following high bidders, who sent in their bids on December 5.

Tract No. 2, Lavaca River Bed, 128 acres, to W. R. R. Oil Company of Dallas, $10,000 cash, 51.5 percent oil royalty, 34 percent gas royalty, 12½ percent sulphur royalty and 6¼ percent other minerals royalty.

Tract No. 1, Menefee Bayou, 10 acres, to Humble Oil & Refining Company, $1500 cash, 41 percent each oil, gas, sulphur and other minerals royalty.

Tract No. 2, Menefee Bayou, 15 acres to Humble Oil & Refining Company, $2500 cash, 41 percent each oil, gas, sulphur and other minerals royalty.

Henderson, Navarro, Panola and Shelby counties, Tract No. 1, Block No. 4, Trinity River Bed, 20 acres, Flag Lake field, to S. N. Rowan of Athens, $2000 cash, 33-1/3 percent oil and gas royalty, 12½ percent sulphur royalty, and 6¼ percent other minerals royalty.

Tract No. 1, Block No. 2, Sabine River Bed, 70 acres, to W. B. Powell, of Fort Worth, $350 cash and 5/32 oil and gas royalty.

Tract No. 2, Block No. 2 Sabine River Bed, 70 acres, to W. B. Powell, of Fort Worth, $350 cash and 5/32 oil and gas royalty.

Leases were not awarded on the Venado Creek and Nueces Bay tracts.

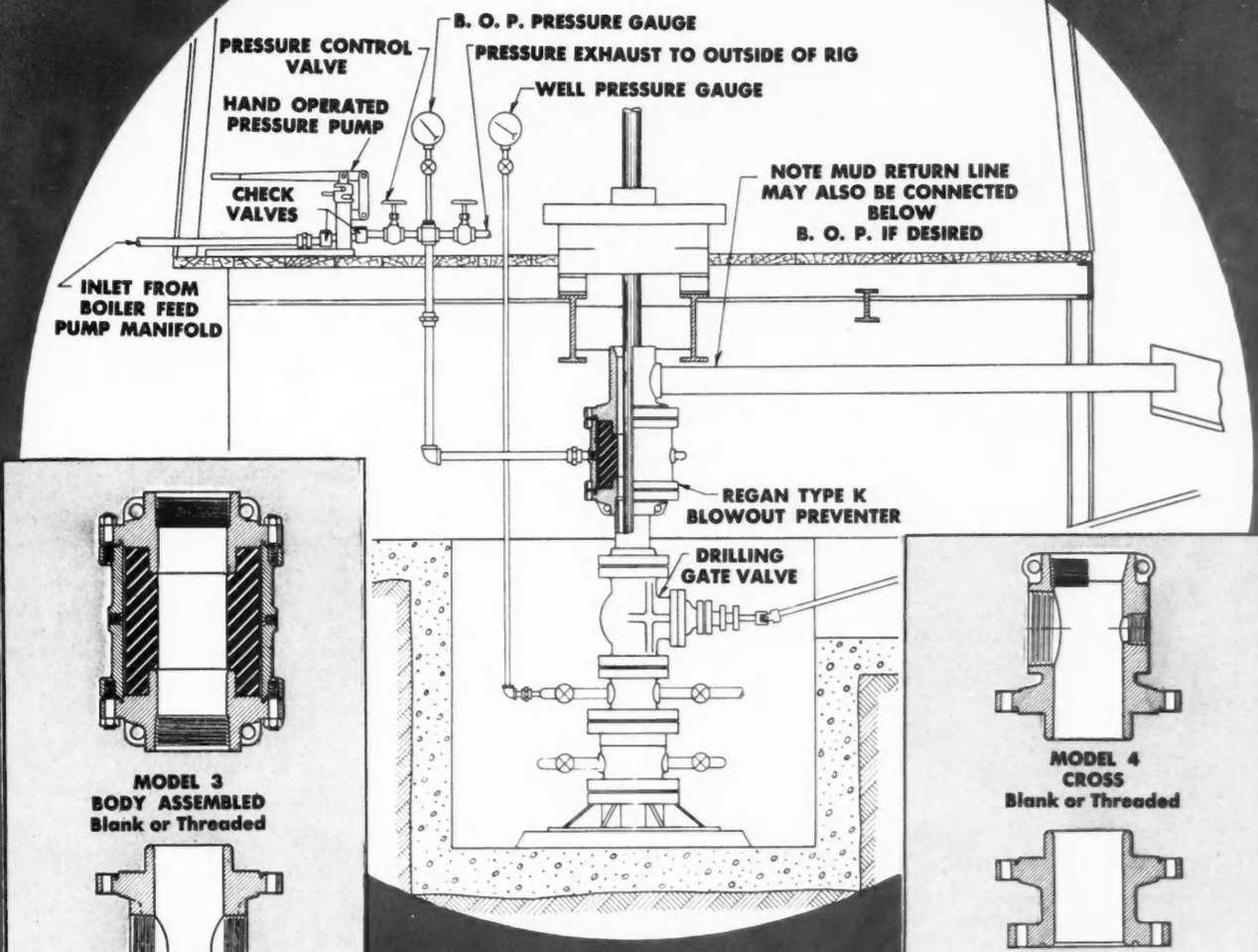
Indiana warns strict observance of drilling rules

A warning that violators failing to observe state regulations governing oil and gas drilling in Indiana are subject to a fine and possible imprisonment was voiced last week by Virgil M. Simmons, commissioner of the department of conservation, in announcing stricter enforcement of the regulations by the division of geology.

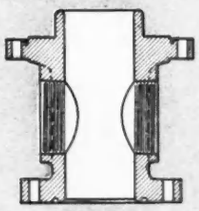
Indiana regulations provide for a drilling permit, that drilling records be filed with the division, and that abandoned wells be plugged under supervision of a certified oil and gas inspector.

Recycling permit

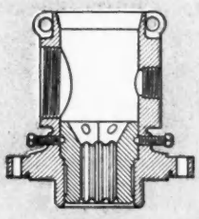
A permit to operate a recycling plant in the Agua Dulce field, Nueces County, has been granted by the Texas Railroad Commission to L. M. Lockhart.


B. O. P. PRESSURE GAUGE
PRESSURE CONTROL VALVE
PRESSURE EXHAUST TO OUTSIDE OF RIG
WELL PRESSURE GAUGE
HAND OPERATED PRESSURE PUMP
CHECK VALVES
NOTE MUD RETURN LINE MAY ALSO BE CONNECTED BELOW B. O. P. IF DESIRED
INLET FROM BOILER FEED PUMP MANIFOLD
REGAN TYPE K BLOWOUT PREVENTER
DRILLING GATE VALVE

MODEL 3
BODY ASSEMBLED
Blank or Threaded



MODEL 6
SPOOL CROSS
Series 900 or 1500 Flange



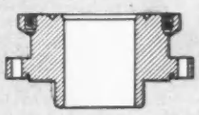
MODEL 7
CROSS and BUSHING
Bushing for size pipe run

REGAN Type K Blowout Preventer —available with End Fittings For All Needs

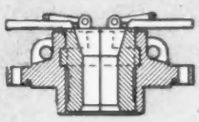
With Type K Blowout Preventer numerous fittings are available to obtain any desired means of hook-up . . . Ask for full details.

MODEL 4
CROSS
Blank or Threaded

MODEL 5
SPOOL
Series 900 or 1500 Flange down



MODEL 9
ADAPTER FLANGE
Tapped for Series 900 or 1500



MODEL 11
TOP FLANGE with BUSHINGS
Bushing for size pipe run

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Quality — Wrought on the Forge of Experience

Mid-Continent Office
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G. R. Woods, Rep.

Oklahoma and Kansas
Representatives
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Tulsa and Wichita

Gasoline remains weak; other products firm

The past week brought an extension of former market trends. Gasoline remained weak and unsettled, while other products were firm to strong, some price advances having been made on fuel oils and kerosene, and lubricants having continued in large demand.

Following the reductions of around ¼ cent a gallon in the previous two weeks, prices of gasoline at Oklahoma-Kansas refineries were maintained unchanged last week, although all grades were freely available. The open market apparently was favorably affected by the fact that movement against contracts was fairly good.

Market Partially Stabilized

The firmer tone of the primary markets caused some stiffening of the Middle Western tank car market, as resellers were less disposed to cut prices on the supplies they held. However, some tank car marketers continued to offer all grades of gasoline at less than the Oklahoma refinery prices, some material having been quoted from ⅛ to 5/16 cent under the Group 3 market.

The gasoline market obviously is reflecting the large amount of surplus material in storage, stocks in the United States now being about 10 percent larger than the excessive supply held at this time last year, while demand is up only around 5 percent.

The kerosene market presented a favorable contrast with the gasoline market. Quotations were advanced from ⅛ to ⅜ cent a gallon by some tank car marketers in the Chicago territory. Consequently, the prices at Oklahoma-Kansas refineries were firm, although unchanged.

Range oil also was marked up in the Middle Western marketing district, the lowest quotations of some tank car marketers having been raised ⅛ cent a gallon.

Fuel Oils Strong

Fuel oil demand has continued good, and there has not been any loosening up of supplies, the inventories of both light and heavy oils remaining comparatively small, in relation to the current exceptionally large consumption.

Prices of all the fuel oils, consequently, have continued firm at the current improved levels, although no further advances have been posted within the past 10 days.

Lubricants Firm

The markets for lubricants continue particularly strong, with further export inquiries developing, following some lagging of foreign demand in recent weeks, due to slowness of shipment of previously purchased supplies.

Neutral oils are being sought with particular eagerness, as supplies are especially scarce. But bright stock demand also is remarkably good.

The markets for lubricants are good in all districts, including the Mid-Continent as well as Western Pennsylvania.

PRODUCT PRICES

REFINED GASOLINE

	Range Last Week (Cents a gal.)		Changes from Week Before	
Oklahoma Refineries:				
62 Octane and Under	4 ¼	4 5/8	...	...
63-66 Octane	4 ½	4 7/8	...	...
67-69 Octane	4 5/8	5 ¼	...	...
70-72 Octane	5	5 ½	...	...
Mid-Western Tank Car:				
62 Octane and Under	4 ⅛	4 5/8	+½	—⅛
63-66 Octane	4	4 ¾	...	...
67-69 Octane	4 ¾	5 ¼	+½	+⅛
70-72 Octane	5	5 ½	+½	+⅛

NATURAL GASOLINE

Grade 26-70:				
F. O. B. Group 3	3 ¼	...	—½	...
F. O. B. Breckenridge, Texas	3	...	—½	...

KEROSENE

Oklahoma Refineries:				
41-43 water white	3 ½	4 ¼	...	...
42-44 water white	3 5/8	4 5/8	...	...
Mid-Western Tank Car:				
41-43 water white	3 5/8	4 ¼	+⅛	+¼
42-44 water white	3 ¾	4 5/8	+⅛	+⅜

FUEL OILS

Mid-Western Tank Car:				
Range Oil	3 ½	3 7/8	+⅛	...
Gas and Fuel Oils:				
No. 1 Prime White	3 3/8	3 ¾	...	...
No. 1 Straw	3 ¼	3 ¾	...	...
No. 2 Straw	3 ⅛	3 ¼	...	...
No. 3 Straw	3	3 ⅛	...	...
No. 5 (per bbl.)	65	...	...	...
No. 6 (per bbl.)	45	...	...	...

Trends of United States Production and Stocks

Figures are from American Petroleum Institute weekly reports, except those on crude stocks, which are from Bureau of Mines weekly reports

	Crude Oil Production (Barrels Daily)	Crude Runs to Stills (Barrels Daily)	Crude Oil Stocks (Barrels)	Gasoline Stocks (Barrels)	FUEL OIL STOCKS	
					Gas Oil & Dist. Fuels	Residual Fuel Oil
1937:						
August 28	[5]3,731,450	3,425,000	309,506,000	66,997,000	112,111,000	
September 25	3,666,300	[5]3,455,000	307,974,000	65,620,000	116,472,000	
1938:						
March 19	3,433,550	3,080,000	306,380,000	[1]93,192,000	122,067,000	
November 12	3,243,250	3,180,000	273,394,000	[6]67,551,000	34,175,000	120,491,000
November 26	3,260,900	3,295,000	270,563,000	68,628,000	33,749,000	119,885,000
December 10	3,245,100	3,150,000	[6]269,509,000	68,587,000	32,068,000	118,711,000
December 31	3,201,450	3,115,000	273,024,000	71,695,000	29,082,000	115,741,000
1939:						
January 28	3,248,250	3,235,000	271,763,000	77,279,000	26,583,000	112,766,000
February 25	3,328,850	3,185,000	271,758,000	84,597,000	23,419,000	110,252,000
March 25	3,382,350	3,225,000	273,915,000	87,561,000	21,487,000	107,551,000
April 22	3,526,700	3,280,000	277,156,000	[2]87,769,000	21,058,000	105,035,000
April 29	3,568,200	3,405,000	278,440,000	86,794,000	[7]25,844,000	[7]108,409,000
May 6	3,580,900	3,275,000	[2]278,607,000	86,216,000	26,167,000	108,597,000
May 27	3,585,250	3,405,000	278,289,000	84,152,000	26,992,000	109,386,000
June 24	3,452,800	3,430,000	272,297,000	81,733,000	30,239,000	111,726,000
July 29	3,539,100	3,460,000	268,513,000	77,887,000	34,900,000	114,053,000
August 5	[1]3,909,400	3,445,000	268,982,000	76,431,000	35,601,000	114,512,000
August 26	[10]1,690,800	3,475,000	246,982,000	73,475,000	37,722,000	116,237,000
September 30	3,658,200	3,560,000	233,023,000	71,168,000	38,081,000	115,466,000
October 7	3,435,850	3,505,000	231,564,000	[6]71,152,000	38,549,000	114,397,000
October 21	3,771,550	[1]3,650,000	[3]229,127,000	72,122,000	39,358,000	115,060,000
October 28	3,498,500	3,520,000	230,453,000	72,660,000	39,562,000	114,786,000
November 25	3,818,100	3,510,000	231,811,000	75,595,000	38,527,000	112,106,000
December 2	3,289,200	3,480,000	234,161,000	76,365,000	37,955,000	110,383,000
December 9, 1939	3,827,350	3,460,000	.....	77,196,000	37,087,000	109,291,000
December 10, 1938	3,245,100	3,150,000	[4]271,065,000	70,089,000	[8]	[9]
Change in past year	+17.9%	+9.9%	—13.6%	+10.1%	—3.2%	—10.8%

[1] All time peak. [2] Peak for 1939. [3] Lowest since April, 1922. [4] Stocks, December 3, 1938.
[5] Peak prior to 1939. [6] Lowest for year.
[7] Prior to April 29, 1939, data did not include stocks at terminals, in transit, etc., except in California.
[8] Available data for year ago include only stocks at refineries, and not at terminals, in transit, etc., except in California. Those stocks on December 9, 1938, totaled 30,986,000 barrels and comparable stocks on December 9, 1939, totaled 29,984,000 barrels, or 3.2% less.
[9] Available data for year ago include only stocks at refineries, and not at terminals, in transit, etc., except in California. Those stocks on December 9, 1938, totaled 117,271,000 barrels, and comparable stocks on December 9, 1939, totaled 104,590,000 barrels, or 10.8% less.
[10] Lowest since October, 1922, due to the shutdown of six Mid-Continent states.

Gasoline stocks are large; other products limited

Exceptionally large gasoline stocks on the one hand and comparatively small fuel oil inventories on the other were reflected again in the statistics of the industry for the week ended December 9. The figures also showed relatively large crude oil production and refinery runs.

Production and Runs

United States crude oil production averaged 3,827,350 barrels daily in the week of December 9, according to the American Petroleum Institute, having jumped within a short distance of the all-time peak of 3,909,400 barrels that was set in August. However, the large output was a temporary condition, having been 537,150 barrels a day greater than that in the previous week, due to the shutdown system in Texas. That state accounted for 508,350 barrels of the increase, although for the month as a whole it will be fairly well within market demand.

Crude runs to stills were reduced

20,000 barrels, but at the new rate of 3,460,000 barrels daily were 9.9 percent greater than in the corresponding week last year.

Gasoline Situation

Gasoline production was lowered to 12,027,000 barrels for the seven days ended December 9. That was 356,000 barrels less than in the previous week, a reduction of about 50,000 barrels in the daily output.

Stocks of finished and unfinished gasoline were increased 831,000 barrels within the week, despite the substantial curtailment of production. Having risen to 77,196,000 barrels, the inventory was 10.1 percent larger than at the corresponding time last year. The supply a year ago was seriously excessive, and the present storage is even more excessive, notwithstanding increased demand, which is up only about 5 percent in comparison with the 10 percent gain in stocks.

Heating Oils

Stocks of gas oil and distillate fuels were drawn upon rather heavily in the week ended December 9, having been cut 868,000 barrels. The remainder of 37,087,000 barrels left in storage was 3.2 percent smaller than the supply held at the corresponding time last year, although demand for these lighter oils has been running considerably more than 10 percent higher this year than last year. The greater demand has reflected increased requirements for domestic heating, resulting from numerous installations of new oil burners.

The brisk industrial production of the United States has resulted in continued large consumption of industrial fuel oils, and in meeting the requirements, the industry has had to draw substantially on storage. The stocks of residual fuel oils were further reduced 1,092,000 barrels in the week ended December 9, having come down to 109,291,000 barrels. At that level, they were 10.8 percent lower than at the corresponding time last year, although demand is running more than 10 percent higher than a year ago.

Crude oil stocks in the United States were increased more than 2,000,000 barrels in the week ended December 2, according to the Bureau of Mines. But that gain did not reflect any lasting over-production of crude. It resulted from one of the weeks of extra production in Texas, under the previously mentioned shutdown system, which causes fluctuations above and below market demand, from week to week.

Production change 29,790 barrels up from previous week

United States production of crude oil during the week ended December 16 averaged 3,836,365 barrels daily. The violent fluctuations from week to week over the past three months were absent as Texas enjoyed two consecutive 5-day production weeks for the first time in that period. The gain of 29,790 barrels daily from the week before was due to moderate increases in Kansas, California, and Texas, with no offsetting losses elsewhere.

The 8 prorated states overran aggregate allowable by 192,528 barrels daily, and exceeded Bureau of Mines estimate of demand by 188,465 barrels. The nation as a whole enlarged the margin of excess over the bureau to 216,665 barrels.

Texas produced 1,559,350 barrels daily, 8800 barrels above the week previous, and 121,250 barrels daily above the bureau.

California was up 5100 barrels to 619,500 barrels daily, where it was 20,500 barrels over state recommendation and 25,000 barrels over federal forecast of demand.

Oklahoma yield, at 432,265 barrels daily, was 290 barrels above that of the week previous and 5335 barrels below state and federal quotas.

Illinois increased 2000 barrels to 335,900 barrels daily, 20,700 barrels above bureau advice.

Louisiana output was close to the week before as a 450-barrel drop to 270,450 barrels put production 15,250 barrels in excess of state and federal allocations.

Kansas registered the largest gain of the week, 20,900 barrels, in moving to 182,450 barrels daily. At this level production was 14,400 barrels greater than that prescribed by state and bureau.

Two new completions brought Mississippi output to 2000 barrels daily, from which point it will apparently move into contest with Colorado and Indiana for the cellar championship.

United States Crude Oil Production

Estimates Compiled by THE OIL WEEKLY

DISTRICT OR STATE	Bureau of Mines Estimate of Daily Demand (Dec.)	State Allowable in Dec.	BARRELS DAILY FOR WEEK ENDED Dec. 16	Dec. 9
TEXAS—				
Texas Panhandle			76,050	82,250
North Texas			97,350	97,000
West Central Texas			34,650	34,350
West Texas			267,800	261,950
East Central Texas			93,350	92,000
East Texas Field			489,200	494,000
South Texas			246,750	245,000
Texas Gulf Coast			254,200	244,000
Total Texas	1,438,100	1,402,673*	1,559,350	1,550,550
CALIFORNIA—				
Long Beach			44,500	45,000
Santa Fe Springs			26,100	27,100
Huntington Beach			27,600	27,700
Dominguez			17,100	18,700
Ventura Avenue			37,200	36,200
Midway-Sunset			53,100	48,700
Kettleman Hills			51,600	49,000
Wilmington			86,500	85,300
Others			275,800	276,700
Total California	594,500	599,000†	619,500	614,400
OKLAHOMA—				
Oklahoma City			108,900	109,150
Seminole Area			110,025	108,875
Fitts			21,100	21,800
Others			192,140	192,150
Total Oklahoma	437,600	437,600	432,265	431,975
ILLINOIS—				
New Pools			327,900	325,850
Old Pools			8,000	8,050
Total Illinois	315,200		335,900	333,900

DISTRICT OR STATE	Bureau of Mines Estimate of Daily Demand (Dec.)	State Allowable in Dec.	BARRELS DAILY FOR WEEK ENDED Dec. 16	Dec. 9
LOUISIANA—				
North Louisiana			69,250	68,250
South Louisiana			201,200	202,650
Total Louisiana	255,200	255,200	270,450	270,900
KANSAS—				
Burrton-Haven			10,750	11,100
Russell County			27,600	22,450
Silica			12,200	10,050
Others			131,900	117,950
Total Kansas	168,000	168,000	182,450	161,550
NEW MEXICO	110,000	110,000	111,000	111,900
EASTERN STATES—				
Pennsylvania Grade			75,500	77,150
Others, Eastern			25,900	26,750
Total Eastern States	104,600		101,400	103,900
MOUNTAIN STATES—				
Wyoming	60,000		67,100	69,900
Montana	15,200		17,100	16,900
Colorado	4,200		3,900	3,950
Total Mountain States	79,400		88,100	90,750
MICHIGAN	61,000	65,000	65,050	65,000
ARKANSAS	56,100	72,000	68,900	70,100
MISSISSIPPI			2,000	1,650
‡Total 8 Prorated States	3,120,500	3,116,437	3,308,965	3,276,375
Total United States	3,619,700		3,836,365	3,806,575

* Daily average, considering 12 shutdown days and various exemptions.
† Recommendation of Central Committee of California Oil Producers.
‡ Texas, California, Louisiana, Oklahoma, Kansas, New Mexico, Arkansas, Michigan.

October production near all-time peak; crude stocks down

Crude petroleum production in October was at a level exceeded only once in the history of the industry, with output during the month averaging 3,683,800 barrels a day, 78,200 barrels above the September figure and approximately 400,000 barrels above the October, 1938, average, according to the monthly report of the Bureau of Mines.

The peak production was reached in August, 1937, at 3,712,600 barrels, a figure which may be equaled or surpassed before the end of this year.

An outstanding feature of the month, the bureau found, was a decline in Illinois production which, despite a marked gain in completions, dropped from 348,100 barrels a day in September to 342,000 barrels in October, the first decrease since April, 1937.

Practically every other state in the oil sector registered gains, the greatest being 25,500 barrels over the September daily average in Louisiana, followed by Oklahoma. Most of the producing districts in Texas declined, but the loss was more than offset by East Texas. California production held steady in all districts, with a gain in daily average of less than 1000 barrels.

The gain in production was accompanied by increased runs to stills, with imports, exports and the change in stocks remaining relatively unaltered from September. Stocks of crude declined about 3,700,000 barrels, reaching the low point of 230,854,000 barrels on October 1.

The gasoline yield increased from 45.1 percent in September to 45.3 percent in October, the bureau reported, whereas the yield of gas oil and distillate fuel oil increased from 12.3 to 13.5 percent, it being pointed out that these gains in yield were made at the expense of products other than residual fuel oil, the yield of which was unchanged.

"The total demand for motor fuel in October about met expectations, but exports were less than expected, making the indicated domestic demand higher than had generally been estimated," the bureau commented, in reviewing the month.

"The domestic demand in October was 49,687,000 barrels, or 7 percent above the demand in October, 1938. Exports were 3,443,000 barrels, or 24 percent lower than a year ago. Despite the favorable demand, motor-fuel production was at such a high level in October that stocks of finished gasoline increased 2,618,000 barrels.

"Slightly less kerosene was delivered to domestic outlets this year than last, but the domestic demands for both light and heavy grades of fuel oil were up 11 percent. In addition, stocks of both kinds of fuel oil were materially lower than on October 31, 1938. The demand situation for lubricants and wax continued strong and the domestic demand for coke registered a material rise."

According to Bureau of Labor Statistics figures, the price index for petroleum products in October was 54, compared with 53.3 in September and 53.8 in October a year ago. The crude-oil capacity represented by the data in the report was 4,184,000 barrels, giving an operating ratio of 86 percent, compared with 85 percent in September and 79 percent in October, 1938.

United States Bureau of Mines Report of Supply and Demand of all Oils, October, 1939

(Thousands of Barrels)

	October, 1939	September, 1939	October, 1938[1]	January-October 1939	January-October 1938[1]
New Supply:					
Domestic production:					
Crude petroleum	114,198	108,168	101,793	1,037,559	1,013,426
Daily average	3,684	3,606	3,284	3,413	3,334
Natural gasoline	4,481	4,132	4,461	41,038	42,586
Benzol[2]	259	225	176	1,898	1,383
Total production	118,938	112,525	106,430	1,080,495	1,057,395
Daily average	3,837	3,751	3,433	3,554	3,478
Imports:[3]					
Crude petroleum:					
Receipts in bond	494	531	557	4,271	2,673
Receipts for domestic use	2,605	2,553	2,136	23,364	18,520
Refined products:					
Receipts in bond	1,741	1,230	1,744	16,317	17,175
Receipts for domestic use	464	541	479	5,897	5,963
Total new supply, all oils	124,242	117,380	111,346	1,130,344	1,101,726
Daily average	4,008	3,913	3,592	3,718	3,624
Decrease in stocks, all oils	3,815	6,667	5,915	42,858	[4]5,675
Demand:					
Total demand	128,057	124,047	117,261	1,173,202	1,096,051
Daily average	4,131	4,135	3,783	3,859	3,605
Exports:[3]					
Crude petroleum	6,947	6,925	6,780	62,094	66,769
Refined products	9,805	10,797	9,388	100,536	96,779
Domestic demand:					
Motor fuel	49,687	49,347	46,365	461,588	436,177
Kerosene	5,019	4,638	5,185	47,865	44,179
Gas oil and distillate fuels	11,365	9,271	10,206	103,222	90,204
Residual fuel oils	28,475	26,514	25,624	260,987	234,555
Lubricants	2,656	2,207	1,805	19,861	17,664
Wax	144	116	72	863	863
Coke	793	433	442	5,864	4,563
Asphalt	2,986	3,326	2,620	23,443	21,315
Road Oil	577	1,072	695	7,563	7,478
Still gas	5,970	5,609	5,646	55,462	55,294
Miscellaneous	173	171	149	1,850	1,487
Losses	3,460	3,621	2,284	22,004	18,724
Total domestic demand	111,305	106,325	101,093	1,010,572	932,503
Daily average	3,590	3,544	3,261	3,324	3,067
Stocks:					
Crude petroleum:					
Refinable in U.S.	230,854	234,555	277,422	230,854	277,422
Heavy in Calif.	14,070	14,085	17,143	14,070	17,143
Natural gasoline	5,140	5,891	6,771	5,140	6,771
Refined products	261,548	260,896	269,336	261,548	269,336
Total, all oils	511,612	515,427	570,672	511,612	570,672
Days' Supply	124	125	151	133	158

[1] Final figures. [2] From Coal Economics Division. [3] Imports of crude as reported to Bureau of Mines; all other imports and exports from Bureau of Foreign and Domestic Commerce. [4] Increase.

October refinery runs ahead of September and a year ago

Jumping 63,000 barrels above the September level, crude runs to stills in October averaged 3,580,000 barrels a day, it was reported by the Bureau of Mines. The October runs were 29,000 barrels a day above the average for the same month in 1938.

Imports of foreign crude decreased slightly, from 103,000 to 100,000 barrels a day, it was said.

The bureau's report showed that total receipts of crude at refineries during the month were 111,923,000 barrels, of which 108,824,000 barrels were domestic and 3,099,000 barrels foreign oil. Runs to stills totaled 110,980,000 barrels and fuel and losses were 146,000 barrels.

As a result of receipts running ahead of consumption, stocks at refineries increased slightly during the month, from 45,876,000 to 46,673,000 barrels, it was stated.

Natural gasoline output up; stocks decline in October

Natural gasoline production in October averaged 6,071,000 gallons a day compared with 5,785,000 gallons in September, it was reported by the Bureau of Mines.

Greatest increases, the bureau said, were registered in the Panhandle, Oklahoma City, East Texas and Appalachian districts.

Total production for the month was 188,202,000 gallons against 173,544,000 gallons in September.

The bureau pointed out that although the proportion blended in gasoline at refineries (8 percent) was less than a year ago (9 percent), stocks decreased during the month, those at refineries dropping from 107,310,000 to 96,348,000 gallons and at plants and terminals from 140,112,000 to 119,532,000 gallons.

Benavides rules revised

Rules for the Benavides field, Duval County, have been revised by the Texas Railroad Commission to limit withdrawals of gas from gas wells in the field. The wells are placed on a volumetric basis so that the gas wells may produce no more daily than is produced from that oil well which produces the largest volume of gas. However, although oil well proration units are ten acres, as much as 80 acres may be assigned to one gas well.

3 Successful LINER HANGERS

THEIR QUALITY AND PERFORMANCE *Protect* YOUR WELL DRILLING INVESTMENT!

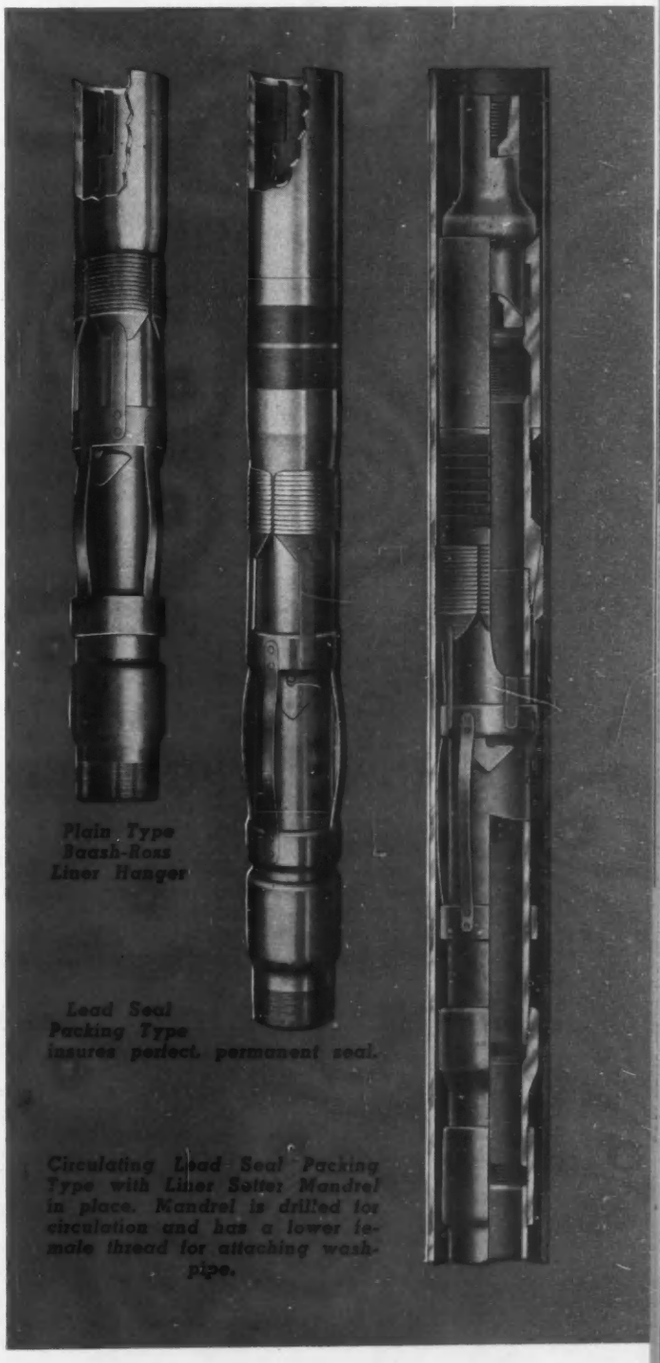
Every feature found in these Baash-Ross Liner Hangers has been thoroughly proved through years of service. The liner hangers are constructed to suspend safely the longest liners without damage to the supporting casing, because of the extra large gripping area of the slips. The simple setting mechanism permits the liner hanger to be set immediately upon reaching the desired level. The design and simple operation of the setting tool insure the liner being positively set, and provide quick, easy release after setting. There is no feature of the design or operation of Baash-Ross Liner Hangers that requires the services of a special operator.

PLAIN TYPE— This type is used when support only is needed for the liner to keep it from buckling or to prevent its "drilling" itself into a soft formation.

LEAD SEAL PACKING TYPE— The pure-lead packing forms a perfect, permanent seal as long as the liner is left in the hole, and does not become cemented to the casing through pressure, heat, or long standing. Hence, the liner can be easily removed at any time. A beveled bronze expander ring squeezes the lead packing rings into tight contact with the casing when the weight of the liner is brought to rest upon the slips.

CIRCULATING LEAD SEAL TYPE— With this liner hanger the liner is first suspended, then the hole behind the perforations is thoroughly washed with circulation, and the lead packing rings are subsequently expanded just before releasing the mandrel from the adapter. Ample space is allowed between the slips for free flow of the wash fluid after the slips are set and before the lead rings are squeezed into sealing contact by rotation of the adapter.

SAFE, SIMPLIFIED SETTING OPERATION— Because of the simplicity of the equipment, and the ease and safety of its operation, the use of the Baash-Ross Liner Setter Mandrel and Adapter (left) has gained practically universal acceptance. The mandrel, which is drilled for circulation, is used both for running the liner and, later, as a pulling tool when the liner is to be removed. The Adapter is regularly supplied as top connection for Baash-Ross Liner Hangers, but any other type connections can be furnished.



Plain Type Baash-Ross Liner Hanger

Lead Seal Packing Type insures perfect, permanent seal.

Circulating Lead Seal Packing Type with Liner Setter Mandrel in place. Mandrel is drilled for circulation and has a lower female thread for attaching washpipe.

BAASH-ROSS TOOL COMPANY

General Offices: 5512 BOYLE AVENUE, LOS ANGELES

OKLAHOMA CITY
1559 S. E. 29th St.

HOUSTON
5300 Clinton Drive

EXPORT OFFICE: 30 Rockefeller Plaza
New York, N.Y., U.S.A.

PIPE LINE NEWS

32-mile pipe line section blows up during leak search

A series of rapidly moving explosions shattered a large portion of Shell Pipe Line Corporation's McCamey-Cushing 10-inch trunk line along a 32-mile interval between Archer City and Ryan stations, near the Texas-Oklahoma border. The accident occurred about 8 a m. December 12 while conducting a search for leaks with the normal oil load displaced by odorized compressed air.

H. M. Hovis, division superintendent, and a crew of workmen scattered along the right-of-way witnessed the mishap, which was said to resemble the firing of a string of land mines, with split joints of pipe scattered over a wide area. All escaped injury, although a motorist was slightly injured when his car was caught by the blast at a high crossing, 10 miles southeast of Wichita Falls.

A thorough investigation as to the cause of the explosions was immediately launched by officials of the company. However, doubt prevails as to whether the source of the spark that touched off the explosions can be definitely determined.

The line handles mixed grades of sour and semi-sweet crude from New Mexico and West Texas fields along with comingled crude, natural gasoline and refined gasoline. The carrier is equipped with cathodic protection units, which were in operation along the damaged section of line.

Immediate replacement of the damaged section was undertaken by the company, as the carrier normally operates near its capacity load of 40,000 barrels daily. Representative of the company stated that the gap will be re-built within 10 days, if prompt delivery can be obtained on the required casing. The original line has been in service since May, 1928.

Nearly all owners of trunk lines in the southwest dispatched representatives to the scene in order to gather first hand information and ascertain if their units are subject to a similar experience.

No Damage to Other Lines

The fact that the line was shattered at intervals confined the damage to company property and right-of-way. Lone Star Gas Company's Oklahoma-Petrolia high-pressure gas line is crossed by the crude carrier, but the explosions skipped this particular sector. Such was also true of Burkburnett-Fort Worth trunk lines operated by Gulf Refining Company, Magnolia Pipe Line Company and The Texas Pipe Line Company.

Loss of oil, amounting to 2500 to 3000 barrels monthly, has been experienced by Shell Pipe Line Corporation, due to leaks that could not be located across Baylor, Archer and Clay counties, Texas. Soil conditions create an abundance of electrolysis that results in small leaks. In this particular sector the escaping oil is not always evident on the surface, but reaches cracks below the surface. The company uses right-of-way walkers in addition to airplane patrol in this trouble area.

Renewed effort to check the oil loss was undertaken December 8, according to an announcement by the company. The oil load was displaced from Baylor station to Ryan, followed by a head of odorized air injected to 90 to 100 pounds pressure. Movable plugs were inserted at intervals. This operation revealed 8 hidden leaks between Baylor and Archer City stations. The movement of oil from Baylor to Archer City station was resumed on the afternoon of December 11 to push the air column from the latter point to Ryan station. The leading plug and head of air had progressed to the Red River crossing when the movement apparently became checked. The explosions broke loose, tearing up sections of the line towards Archer City station.

Failure of the entire section of line involved in the blast to shatter is attributed by pipe line engineers to the fact that combustible gases were present in the spared sections while the destroyed joints contained explosive mixtures.

Panhandle Eastern places order for 140 miles of pipe

A. O. Smith Corporation will supply 75 miles of natural gas line for Panhandle Eastern Pipe Line Company as part of the order to construct 140 miles of loop lines in the company's main artery between Liberal, Kansas and Springfield, Illinois.

Approximately 25,000 tons of steel will be necessary for the 140 miles of 22-inch and 24-inch pipe.

This construction is in accordance with Panhandle Eastern Pipe Line Company's $3,500,000 expansion project recently announced.

Orders for the remainder of the pipe went to another unnamed firm.

Lone Star completes 52-mile line from Buffalo gas field

Lone Star Gas Company has completed construction of a 52-mile 8-inch natural gas line from the Buffalo field, Leon County, Texas, to a point near Bryan, where it ties into the low-pressure end of a 6-inch carrier. Pressure tests were slated to be completed late last week, so as to make the line available in the event of a cold spell.

The company has 2 small projects scheduled for completion before the end of the year. In southern Oklahoma, a 10-mile 10-inch unit is being built from a gas pool near Doyle, Stephens County, to tie into its transmission system near Robberson. A 5-mile 6-inch line is being built from Murray Samuell et al's deep gas-distillate discovery in Limestone County, Texas, to connect with the company's system near Groesbeck.

Plan line to move distillate from Chapel Hill field

Hunt Oil Company, Dallas, will build an 8½-mile 3-inch welded pipe line from the Chapel Hill deep pool, eastern Smith County, Texas, to a tank car rack on the I. & G. N. Railroad near Overton. This line will handle distillate production, currently averaging 290 barrels daily, from the company's gas-distillate discovery at Chapel Hill, and will parallel a high pressure gas line that makes deliveries to the East Texas field. In the meantime a fleet of tank trucks is being used in transporting the distillate to the rail loading point.

Texas Company building line to handle oil from Paradis

The Texas Pipe Line Company is purchasing right-of-way for a 23-mile 8-inch pipe line from the Paradis field, St. Charles Parish, to Marrero, where the company has a terminal.

ASSOCIATIONS

Petroleum electric power problems are discussed

Wider application of electric power to the petroleum industry was discussed at the eleventh annual conference of Petroleum Electric Power Association, held in Houston December 14-15. Economics and governmental regulation also came in for wide consideration, and the general attitude was toward repelling references working within the country to destroy fundamental rights and privileges.

Francis G. Coates, attorney for Houston Power and Lighting Company, substituting for H. O. Clarke of the same company, declared in an address at the association dinner Thursday night that the oil industry and public utilities had come to the end of their honeymoon stage and should expect much stiffer demand from both the public and government.

"The petroleum industry can learn one thing from the electrical industry—dont make the president mad," Coates added.

"The oil companies have to deal with an even-tempered man—Harold Ickes. He is even-tempered—mad as hell all the time," he said facetiously.

Judge E. E. Townes, vices president and chief counsel for Humble Oil and Refining Company, addressed the conference Thursday and urged American citizenry to guard its rights and privileges. He reviewed accomplishments of the petroleum industry, particularly stressing the significance of the increased yield of gasoline from crude oil. In 1918 the average barrel of crude oil yielded 18 percent gasoline; in 1939 the yield was about 45 percent, he said. Only real progress made such an increased yield possible, he concluded.

E. P. Hubbard, assistant superintendent, Gulf Oil Corporation, Houston, read an interesting paper Thursday on "The Trend of Oil Production Meth-

ods." The geologist and geophysicist have pointed the way to increased oil reserves, and instead of a shortage of oil, the country is confronted with a surplus, he said. This oversupply has had a marked influence on production methods.

Only a few years ago, the problem was to operate each well at its optimum rate of production. The volume usually took care of the "per barrel" cost. If the well could produce under natural flow, the limiting factors were usually determined by the rate that would cut out the screen or pull in water. With artificial lift, roughly a synonym for pumping, the rate of production was a compromise between continuity of operation and structural strength of the rig, he stated.

One of the most important factors in conservation is the efficient utilization of the reservoir energy to produce oil. Under present conditions it appeared that a larger ultimate recovery may be expected, that the flowing life of a field be prolonged, and that artificial lift will require less energy than before, Hubbard said.

"Trends in Cathodic Protection Work," a paper by Vincent L. Nealy, The Texas Company, was a feature of Friday's program. The paper gave a brief historical account of cathodic protection, and suggested that it had long been known that an electric current would prevent deteriorization of a metal. In its simplest form a cathodic protection installation consists of a single anode or ground bed and a source of direct current, together with suitable wire or cable for connecting the ground bed to the positive terminal, and the underground structure to the negative terminal of the d.c. supply, it was shown.

Sufficient current is circulated to give the desired field of protection. Herein lies one of the major problems of cathodic protection: determination of the magnitude of current required, the paper stated. During the discussion following the paper, it was pointed out that of 155,000 miles of "main line" pipe line in the United States, only 2000 miles are protected cathodically.

George Prout, manager of sales, Industrial Control Department, General Electric Company, addressed the conference in the form of a message from the electric manufacturing industry. A high point of his address was the assertion that a pressing need exists for a large, variable speed motor for pipe line use.

A. M. Young, industrial engineer for Central Illinois Public Service Company, talked on "Recent Developments in the Illinois Oil Fields." Wells in this state are shallow, and the energy required for pumping such producers ranges from 3 to 5 horsepower, he said.

K. W. Shimeall, manager of refining for Crown Central Petroleum Corporation, Houston, read a paper on "Development and Trends in Refining."

The association dinner was held Thursday night, with O. W. Jones as toastmaster. Members and visitors were guests of Gulf Publishing Company at a barbecue Friday noon.

Officers elected for 1940 were: A. E. Armstrong, Public Service Company of Northern Illinois, president; Harry E. Roberts, Empire District Electric Company, Joplin, Missouri, vice president; G. H. Weckel, Kansas Gas and Electric Company, Wichita, Kansas, secretary and treasurer.

O. W. Jones, Central Power and Light Company, Corpus Christi, Texas, was the retiring president.

West Central Texans oppose federal control

The eighth annual meeting of the West Central Texas Oil & Gas Association held at Mineral Wells December 11 registered a firm stand against federal control of the oil industry. Approximately 600 operators, representing the stronghold of the stripper well production of Texas, voiced their disapproval of the Cole Bill, which was termed an opening wedge for the regimentation of the petroleum interests of the nation.

Joe A. Clarke, Albany banker and owner of oil producing lands, succeeded Art J. Frazier, Abilene, as president. Clarke was one of the organizers of the association, and has been actively identified with its campaigns to promote the welfare of the independents operating in the district.

The three new vice-presidents are: J. E. Whiteside, Brownwood; Harold G. Neely, Fort Worth; and W. J. Rhodes, Breckenridge. Additions to the board of directors are: Henry Andrews, Stamford; Bert Fields, Dallas; Allen Guiberson, III, Dallas; C. A. Lupton, Fort Worth; K. B. Nowles, Abilene; E. B. Ritchie, Mineral Wells, and Claude Yeatts, Stamford. Former board members were re-elected.

A warning that storm clouds are gathering on the oil industry's horizon was given by Frank Buttram, Oklahoma City owner of stripper well production in the district and president of the Independent Petroleum Association of America. "We must place our own house in order and put up a united front in dealing with tax problems; the flooding of domestic markets with low priced and tax-free crude imports; and the threat of government control." He asserted that political powers in Washington are openly in favor of nationalization of all petroleum interests, based upon charges that physical waste prevails, and that there is a scarcity of oil reserves.

Enumerating the grounds for complaint against the oil industry, Buttram stated that California has been a contributor by voting down a conservation program last summer, while Illinois has failed to date to adopt production regulations. Texas and Oklahoma are not exempt from criticism, he added, as special allowables given certain fields are having a harmful effect on proration, particularly in Texas.

The privilege of free enterprise has enabled the oil business to maintain an abundant supply of low-priced fuel and lubricants in the face of rapidly expanding markets, according to J. C. Hunter, Abilene operator, and president of the General Mid-Continent Oil & Gas Association. He stated that government interference would throttle the pioneering spirit that has made it possible for oil men to find new crude reserves at depth levels considered beyond reach less than a decade ago. Comparing oil men to the early settlers that were constantly seeking new frontiers to conquer, each new producing depth record opens new opportunities.

Oil men are bearing their fair share of the tax burdens. They are proud of some when the money is spent wisely, Hunter added, while they just have to put up with the remainder. While good government is predicated on tax revenues, he charged that the citizens of a state or nation must exercise control over government spending. Touching on the rapid rise of the national debt, Hunter charged that no government can endure if it continues to spend more than it can afford.

The afternoon session of the meeting was devoted to an open forum discussion of subjects having direct bearing on oil operations in the districts. Talks were made by the following: J. Harry Reynolds, Cisco; C. W. Hoffman, Eastland; Elbert E. Hall, Abilene; Blake Johnson, Breckenridge, and E. M. Davis, Brownwood.

San Joaquin Association protests federal control

Resolutions protesting the proposed Cole bill and the reciprocal trade agreement which would place Venezuelan oil in competition with that produced in San Joaquin Valley were passed at the annual meeting last week in California of the San Joaquin Oil Producers Association, presided over by Dana Hogan.

The resolution requested President Roosevelt to withdraw his approval of the Venezuelan treaty. It further requested Congress to enact laws which would prevent recurrence of such trade agreements.

Russell Brown, Washington, general counsel of the Independent Petroleum Association of America, stated that the problems of respective states must be solved by the people of those states and urged immediate recording of the protests contained in the resolution.

L. P. St. Clair, former president of Union Oil Company of California, urged co-ordinated action in combatting problems and that delegates be sent to Washington to let congressmen know the sentiments of oil producers.

Hogan told of the revitalization of the system of voluntary conservation and proration by the newly elected Central Committee of California Producers and by the defeat of the Atkinson oil control measure.

Election of officers for the San Joaquin Oil Producers Association resulted in the following slate: Hogan, president; Allen A. Jergins, vice president, and Thomas W. McManus, secretary. Directors include the officers and E. E. Pyles, Alfred L. Marsten, William Keck, Jr., and R. A. Broomfield.

Sullivan rules amended

The Texas Railroad Commission has amended its rules for the Sullivan City field, Hidalgo County, to provide that gas wells shall produce no more gas than is produced from the oil well in the field which produces the largest volume of gas. There is an exception, however, for wells on units of more than 20 acres. A maximum of 160 acres may be assigned to one gas well.

At a hearing scheduled for January 4 in Austin, revision of this rule will be considered.

WORLD-WIDE DEVELOPMENTS

Edited by WM. V. GROSS, Associate Editor

South America

South American countries have bright oil futures

By Henry Pullman,
Baker Oil Tools, Incorporated

WE are all more or less familiar with the large British and American oil companies operating in Trinidad and Venezuela. Their operations were slightly curtailed a few months back, but due to possible war demands there is now a definite increase. How long this increased activity will last, or to what extent it may develop, is open to anybody's guess.

But war demands or no war demands, we can be certain that for a long time to come Trinidad and Venezuela will be areas in which there will be active field developments.

East Venezuela Important

It is the unanimous opinion among the fraternity that Eastern Venezuela has great possibilities, but no one seems to agree on just how great those possibilities are. But we do know that conditions have already come to light which will call for every type of equipment the industry has to offer.

Operators in Colombia on deep wildcat operations have discovered that their deep wells are apt to have complications, and that they require far greater technique than the operations now being conducted in the old producing areas. In these old proven areas pumping equipment and general repair work will continue to require attention.

In Ecuador operations may be expected to continue on the upgrade. Two large major companies are active with concessions in the Oriente area.

With regard to Peru we may expect a continuation of the present active operations in the Negritos-Lobitos areas on the coast, with the possibility of an increased tempo. These areas are vast and there is still much to be explored. There is also considerable repair work to be done.

In Chile it seems that the area most likely to be oil bearing, and to which intermittent exploratory efforts have been devoted, is far to the south, in the Province of Magallanes. Association with the people of this country is full of pleasant surprises, for they are friendly and cosmopolitan and very eager to learn all they can of the oil business.

Argentina Busy

Up and over the Andes brings us to the very interesting and progressive Argentine republic. This country is now only 60 percent self-sufficient with regard to its petroleum needs, which are constantly increasing. Quite naturally they are very anxious to become entirely self-sufficient. The Y.P.F., a semi-autonomous government organization, produces by far the largest amount of crude in the country. The Shell and Standard groups are in the minority both as regards developing and retail marketing. There are around 60 active projects in proven or semi-proven areas, and that, as you will agree, would not be a small amount of work in any country. Also an energetic campaign is now under way to locate new structures and increase the present production.

In Brazil there is a determined effort on the part of the Conselho Nacional da Petroleo to find petroleum, and they are going ahead with as little delay as possible. Two modern rotary rigs were scheduled to begin actual operations last month, with a third to follow very shortly. These auspicious rotary operations are being conducted under direction of Drilling & Exploration Company. The Conselho also has one cable tool rig in operation.

[1] Extracted from an address recently presented before the Los Angeles Chapter of Nomads.

Peru

Peruvian output unchanged but field activity greater

Peruvian crude petroleum production of 3,290,770 barrels during the third quarter of 1939 remained on practically the same level as in the preceding 3 months, but was 17 percent below the 3,959,061-barrel output in the corresponding period of 1938, according to Julian Greenup of Lima.

On the other hand, increased activity was reported in the drilling of government fields, particularly in the Zorritos district, according to official communiques. Crude oil in appreciable quantities is also said to have been found in Pirin, a district located in the Lake Titicaca region in southern Peru. More wells of the Ganso Azul private concession on the Pachitea River, eastern Peru, are said to be in process of being bored after preliminary drillings which have met with certain success.

Asphalt Demand Growing

No important changes were recorded in the amount of crude oil treated by refineries, but the government has been endeavoring to increase the output of its refinery recently purchased from Faustino G. Piaggio in Zorritos. A notable increase occurred in asphalt production, in line with the growing domestic demand for the paving of highways.

With steady progress in highway construction, in accordance with the 3-year road development program ending this year, the consumption of gasoline during the first 9 months of 1939 was approximately 11 percent above that of the like period of 1938, the corresponding figures being 24,509,616 and 21,934,018 gallons.

Kerosene sales in the same period of 1939 aggregated 4,937,770 gallons, compared with 4,563,032 gallons in the January-September period of 1938. The turnover in all other petroleum derivatives showed a similar upward trend, as shown below:

	Jan.-Sept. Periods 1938	1939
Lubricating oil (gallons)	653,884	732,257
Grease (pounds)	650,895	793,245
Fuel oil (metric tons)	90,761	97,299
Fuel oil Bunker C (metric tons)	100,227	103,932

Consumption of domestic asphalt continued at a higher level than in the previous year. Total sales during the first half of 1939 amounted to 12,286 metric tons as against 6114 tons in the first semester of 1938.

Foreign Trade

Exports of petroleum and petroleum products during the first 8 months of 1939 were as follows:

	Net Kilos
Crude (High cold test)	490,268,824
Low cold test)	149,819,100
Gas Oil	51,941,440
Lubricating Oil	297,058
Turpentine	116,324
Combustible Gas	22,174
Gasoline	222,523,769
Lubricating Grease	26,481
Kerosene	61,445,935
Residue fuel, light	28,754,058
Residue fuel, heavy	14,080,012
Coke	459
Total	1,019,295,634

Imports of petroleum products during the first 8 months of 1939 were as follows:

	Quantity
Crude petroleum (metric tons)	3,946
Kerosene (gross kilos)	24,732
Gasoline and Tractoline, or gas-oil (gross kilos)	88,317
Lubricating oil, in containers of more than 15 kilos (gross kilos)	2,339,672
Lubricating oil, in containers of less than 15 kilos (gross kilos)	253,809
Asphalt, bituminous substances pitch (gross kilos)	97,337
Paraffin wax for industrial uses, in lumps or pieces (gross kilos)	2,210,108

Mexico

Mexico proceeds alone on oil property evaluation

Mexico intends to appoint its own experts to proceed with evaluation of expropriated oil properties, nothwithstanding the companies whose properties were taken have refused to lend an air of sanction to the recent Mexican supreme court's approval of the expropriation by meeting the demand of the judiciary for them to appoint appraisers to co-operate with those of the government.

It is generally known that the Mexican appraisers will work toward a figure in the neighborhood of $150,000,000 in appraising the properties, while value of those same properties by the companies has ranged from $400,000,000 to $600,000,000. The attitude of the Mexican government is that the oil companies will challenge in the courts any figure it may put on the value of the properties.

U. S. FIELD OPERATIONS

TWO McClosky pools were added in Illinois, one in White County called Phillipstown and one in Wabash County called Rochester, and a wildcat in Mt. Carmel Township, Wabash County, recovered 12 feet of Cypress saturation. Cypress and McClosky were added as producing horizons in Storms field, White County. Oklahoma chalked up a new Viola lime pool in McClain County, an extension of Alma, Pottawatomie County, and a Hobart completion that flowed 194 barrels the first hour. Kansas recorded a new Mississippi Chat pool near North Canton in McPherson County, a wildcat 10 miles north of Stoltenberg with Arbuckle saturation, extensions for Walters of Ellis County, Frog Hollow of Cowley County and South Sittner. Southwest Texas had a Duval County wildcat showing for production and one on Green prospect logging 10 feet of oil sand, in addition to a new Frio sand which appears to underlie the large West Ranch field and two new sands and a double extension for Clara Driscoll, Nueces County. Bee County developed a new Vicksburg distillate field and Magnolia City, Jim Wells County, got a new basal Frio sand. In the Texas Gulf Coast a northeast and northwest extension loomed for Anchor, Brazoria County. Fairbanks, Harris County, was extended southeast. In North Texas Bend lime contributed a third horizon for Nocona, Montague County, while a wildcat on Jolly prospect, Clay County, made 142 barrels in 3 hours.

Comparison of Permits Granted for New Wells

STATE	Week Ending Dec. 16	Total this Mo.	Total this Year	Total this Date Last Year	1938 Year Total
Arkansas.	4	12	221	241	247
California	20	51	1,122	1,124	1,146
Illinois*..	101	306	*802	.....	.....
Louisiana.	55	108	1,415	1,188	1,214
Kansas...	43	120	1,540	1,438	1,453
Michigan.	25	71	1,399	935	953
N. Mexico *	18	42	*282	.....	.....
Oklahoma	45	144	2,022	1,927	1,978
Texas....	243	591	10,000	12,150	12,369
Total..	554	1,446	18,752	19,003	19,360

* Data for Illinois dates from Oct. 15, 1939: that for New Mexico from Aug. 1, 1939.

Illinois

Two new fields opened in southeast, both McClosky

Mattoon, Ill.—Two new pools were opened last week, bringing to 49 the new producing areas discovered in the state's new development which started early in 1937. Another two areas were opened but since abandoned. Both new discoveries were in southeastern counties, and are producing from McClosky lime.

Phillips Petroleum Company's Garner 1, SW NE NE NE 36-4s-10e, Phillips Township of White County, topped McClosky at 2955 feet and pumped 285 barrels of oil initially from a pay section that extended to 2961 feet. The discovery topped West Franklin at 503 feet, Providence at 778 feet, Chester at 1768 feet, Upper Kinkaid at 1830 feet, Lower Kinkaid at 1933 feet, Clare at 2077 feet, Menard at 2164 feet, Glen Dean at 2431 feet, Golconda at 2512 feet, Cypress at 2644 feet, Weiler at 2681 feet, Paint Creek at 2805 feet, Bothel at 2816 feet, Renault at 2859 feet had no Aux Vases, and topped the McClosky at 2955 feet. The area has been named Phillipstown.

Marvel Oil Company's L. Beall 1, C NE NW SW 11-2s-13w, Coffee Township in Wabash County, topped a 6-foot McClosky pay section at 2703 feet. It pumped 287 barrels of oil after 500-gallon acid treatment. Menard was topped at 1897 feet, Vienna at 1990 feet, Glen Dean at 2120 feet, Golconda at 2250 feet, Barlow was at 2349-55 feet, Cypress topped at 2355 feet, Weiler was at 2392-2414 feet, Renault was topped at 2589 feet, Fredonia at 2684 feet, McClosky was at 2703-09 feet, and hole bottomed at 2714 feet. The new area has been named Rochester.

Three miles from nearest production in Wabash County, Chet Evarts' P. T. Trapp 1, SE NE NE 6-1s-12w, Mt. Carmel Township, recovered 12 feet of Cypress sand saturation below 2084 feet which was believed good for a commercial well. Burr Lambert, Evansville, is contractor, and the well is 3 miles north of Mt. Carmel. North of Mt. Carmel a mile, O'Marra et al's J. C. Utter 1, Section 17-1s-12w, was moving in machinery for a test. The city council of Mt. Carmel, meanwhile, is considering an ordinance to regulate town-lot drilling.

Third Horizon at Storms

The Cypress sand and McClosky lime were apparently added to the Waltersburg sand as producing horizons in the Storms field near Carmi, White County. Bates & Lichlyter's M. D. Aud 1, C E½ NE SW 27-6s-9e, had only shale in the Waltersburg section and topped the Cypress at 2715 feet. Solid saturation was cored to 2764 feet, with the exception of a few minor breaks. On the east side of the field, W. R. Hayes' Amos Orman 1, NW NE NW 18-6s-10e, was preparing to perforate casing to a promising McClosky show.

South and southwest extensions for the Fairman pool of Marion-Clinton counties were indicated. Wayne Misener's Benoist 1, NE SE NE 24-3n-1w, ¾ mile south of production, had casing set to Benoist saturation at 1479 feet; while Curry & Phillips' DuComb 1, SE NW SE 13-3n-1w, ¼ mile southwest of production, was running casing after recovering Benoist saturation.

Louis Lilly et al's Dave Gum 1, 450 feet from the south line and 725 feet from the east line, NE Lot 24, Block 1, Pullen Subdivision No. 3 of Centralia townsite, first Devonian test in the Centralia field and 20 feet west of that city's boundary, was drilling cement plug. The test had 97 feet of cement in the hole, and was drilling out to 2908 feet preparatory to perforating casing at 2903-08 feet. A total of 30 feet of Devonian pay had been cored, but the bottom section was found high in water content. Bottom is at 2933 feet. It is an old Benoist sand producer that had been abandoned.

Meanwhile, the Centralia city council rejected the first application for a permit within the city limits. Commissioners decided that they would first review the ordinance enacted to regulate drilling two years ago, when the city experienced its first townsite boom with development of the Benoist horizon in the field, and determine whether revisions are advisable. The present ordinance restricts wells to two to a city block, requires a permit fee of $100 and a $5000 surety bond. Inasmuch as many of the Benoist wells drilled in the pool did not pay out, there is considerable agitation for limiting tests of the deeper Devonian to one to a city block.

The Patoka field's first deep test, J. Hal Jones and C. E. Deaton's P. J. Majonnier 1, SW 28-4n-1e, cemented casing to bottom at 2956 feet. Pipe will be perforated opposite pay sections in the lime, reported at 2890-93 feet, 2899-2903 feet and at 2947-50 feet. There is also good possibilities of producing this test from the Rosiclare, where 18 feet of saturation was cored below 1603 feet. Previous development in this field was in the Benoist at about 1425 feet.

Development of the Devonian in the Lake Centralia-Salem field continues at a fair rate, with the apparent second deep well nearing completion and 13 others actually drilling. Magnolia Petroleum Company's W. B. Young 28, NE 20-2n-2e, was bailing mud preparatory to perforating casing. Kingwood Oil Company was running casing at Shanafelt 19-A, SE NW NE 20-2n-2e. Devonian was topped at 3330 feet and hole carried to 3357 feet.

The status of other drilling Devonian tests follow: Kingwood Oil Company's Shanafelt 20-A, SE NE SE 20-2n-2e, at 2400 feet; McBride, Inc.'s Lee 16, NE SE 29-2n-9e, at 2600 feet; McBride, Inc.'s Lee 17, NE SE 29-2n-2e, surface pipe set; Frontier Oil Company's Tri-

angle 4, SW SW NW NW 9-1n-2e, at 950 feet; Ladd Oil Company's Young Chapel 4, SW SW SW NW 21-2n-2e, at 2640 feet; Shell Oil Company's Salem State Bank 6-C, Section 20-2n-2e, surface pipe set; Shell Oil Company's Salem State Bank 9-C, Section 20-2n-2e, at 2100 feet; The Texas Company's McCullom 20, SE SE 29-2n-2e, at 1385 feet; The Texas Company's N. Young 21, at 1238 feet; The Texas Company's N. Young 22, at 1650 feet; and The Texas Company's N. Young 23 at 1155 feet.

Survey shows over 300 operations in new fields

Urbana, Ill.—The Illinois Geological Survey last week estimated the state's production for the current year at 93,000,000 barrels, almost four times last year and about 2000 percent greater than the output three years ago. November production was estimated at 9,888,000 barrels; total for 11 months 82,869,000 barrels.

The survey set at 16,500,000 barrels runs to stills during November in the central refining district, comprising refineries in Illinois, Indiana, Kentucky, Michigan and Eastern Ohio, of which Illinois production is 60.0 percent. The percentage of the state's production to runs-to-stills in the district has been declining slightly for the past two months, it being 61.5 percent in October and 63.5 percent in September.

Wells completed in new fields, or areas opened since January 1, 1937, now number 4767 oil wells and 32 gassers. In development of new areas, 355 dry holes have been drilled within a quarter-mile of production. Currently, 60 tests are drilling in new fields, 180 rigs standing, 24 rigging up, and 40 locations.

Two New Pools

Two new pools were recorded in a summary of November activity; the Fairman area of Marion and Clinton counties, opened by Shell Oil Company's F. Lutz 1, NW NW SE 18-3n-1e, and the Dubois area of Washington County, discovered by Shell Oil Company's M. Dix 1, C NW NE NE 19-3s-1w. The Fairman field numbered 3 producing wells, had 1 drilling and 2 standing at the close of the month, while the Dubois field had 1 producing well and 2 rigs standing.

Activity in the state's other 47 new fields is summarized as follows: Bond County, Sorento, 1 producer, 2 rigs standing, 1 location. Clay County, Flora, 17 producers, 6 dry holes; Iola, 2 producers, 3 dry holes. Clay and Wayne counties, Clay City, 364 producers, 18 dry holes, 2 drilling, 8 rigs standing, 1 location. Clinton and Marion counties, Centralia, 552 producers, 44 dry holes, 1 drilling. Coles County, Hutton, 2 producers, 1 dry hole. Edwards County, Cowling, 6 producers, 1 dry hole, 3 rigs standing, 1 rigging up.

Edwards and White counties, Grayville, 7 producers, 1 rig standing, 1 rigging up. Fayette County, Louden-Beecher City, 1290 producers, 71 dry holes, 9 drilling, 27 rigs standing, 1 rigging up, 15 locations; St. James, 59 producers, 4 dry holes, 5 drilling, 5 rigs standing, 1 rigging up, 3 locations. Franklin County, Whittington, 1 producer. Gallatin County, Junction, 5 producers, 2 rigs standing. Jefferson County, Cravat, 5 producers, 1 drilling, 3 rigs standing, 1 location; Dix, 57 producers; Elk Prairie, 1 producer; Ina, 1 producer, 2 dry holes; Marcoe, 1 producer, 3 dry holes; Roaches, 6 producers, 3 dry holes, 2 drilling. Lawrence County, Russellville gas, 30 producers, 6 dry holes, 1 drilling. Marion County, Patoka, 104 producers, 20 dry holes, 1 rigging up; Salem-Lake Centralia, 1478 producers, 57 dry holes, 15 drilling, 50 rigs standing, 2 rigging up, 4 locations; Sandoval (Devonian), 22 producers, 6 dry holes, 5 rigs standing, 1 rigging up, 1 location; Tonti, 29 producers, 8 dry holes, 1 drilling, 4 rigs standing.

Richland County, Dundas, 8 producers, 2 drilling, 4 rigs standing, 3 rigging up; Noble, 207 producers, 33 dry holes, 2 drilling, 6 rigs standing; Olney, 36 producers, 11 dry holes; Schnell, 4 producers, 5 dry holes. Shelby County, Stewardson, 1 producer. Wabash County, Griffin, 38 producers, 11 dry holes, 1 drilling, 8 rigs standing, 2 rigging up, 1 location; Keensburg, 108 producers, 10 dry holes, 2 drilling, 12 rigs standing, 1 rigging up; Mt. Carmel, 2 producers, 1 rig standing. Washington County, Cordes, 84 producers, 6 dry holes, 1 drilling, 5 rigs standing, 2 rigging up, 3 locations.

Wayne County, Aden, 4 producers, 2 dry holes, 1 rig standing; Barn Hill, 35 producers, 5 dry holes, 1 drilling, 4 rigs standing, 2 rigging up, 3 locations; Boyleston, 22 producers, 4 dry holes, 2 rigs standing; Cisne, 46 producers, 1 drilling, 1 rig standing; Enterprise, 46 producers, 3 dry holes, 1 drilling, 3 rigs standing, 1 location; Goldengate, 4 producers; Leech Township, 9 producers, 1 dry hole, 1 rig standing; Mt. Erie, 1 producer; North Aden, 60 producers, 9 dry holes, 2 rigs standing. White County, Calvin, 2 producers, 1 dry hole, 1 rig standing; Mill Shoals, 20 producers, 1 dry hole, 1 drilling, 6 rigs standing; New Harmony, 5 producers, 3 drilling; Phillipstown, 1 producer; Stokes, 7 producers, 1 rig standing, 1 rigging up; Storms, 5 producers, 7 drilling, 8 rigs standing, 5 rigging up, and 6 locations.

West Virginia drilling ahead of last year

Charleston, W. Va.—A sharp increase in West Virginia drilling activity in October over previous months and the corresponding month a year ago is reflected in permits issued by N. P. Rhinehart, chief of the state bureau of mines.

The 104 permits issued represent an increase of 92.6 percent over the previous month, a gain of 11.8 percent over the year's previous high point of 88 permits in August, and an increase of 76.3 percent over the 59 issued in October of last year. Permits issued during the first 10 months of this year total 633, a gain of 36 or 6 percent over the 597 issued during the corresponding period a year ago.

October permits, by counties, follow: Braxton 5, Cabell 1, Calhoun 4, Doddridge 6, Gilmer 2, Harrison 13, Jackson 1, Kanawha 4, Lewis 2, Lincoln 5, Marion 6, Marshall 5, Monongalia 3, Pleasants 6, Ritchie 4, Roane 8, Tyler 17, Wayne 1, Wetzel 3, Wirt 2, and Wood 6.

Indiana

Touted Gibson County wildcat flows only salt water on test

Evansville, Ind.—Continental Oil Company's J. C. Blood 1, NW NW SW 13-3s-13w, which a week ago promised a new pool 3 miles east of production in the Griffin field of Gibson County, swabbed only salt water on its first test after running tubing to the Cypress sand. The wildcat had saturation between 2366 and 2390 feet, and operators were preparing to change position of the tubing and continue the test in an effort to gain production from the upper sections of the Cypress.

Two miles southeast of Heusler Dome production, Charles Steele et al's (Volkman's) T. Heldt 1, 2340 feet from the south line and 2440 feet from the west line, Section 18-7s-11w, Vanderburgh County, was preparing to drill plug after setting casing to the Waltersburg sand at 1844 feet. The wildcat had been plugged back from 1932 feet.

Another wildcat with casing set was Misener & Baldwin's (Apex Drilling Company's) New Harmony Bank 1, SE SE NW 27-3s-14w, Gibson County, which was to test the McClosky.

Most interesting of the week's new starts was Jordan et al's W. E. Hollingsworth 9, C N½ SW SE 13-2s-10w, which will be a McClosky test in the old West Francisco pool of Gibson County. Production in the field is obtained from the Chester of the Upper Mississippian. Another wildcat location in this county was Howard Johnson et al's Keifer 1, SW SE SE 26-1s-12w.

In Martin County, Pioneer Drilling Company's Meyer 1, NE NE SW 26-2n-4w, was moving in material for a wildcat test, and in Vandenburgh County, J. L. Drake's B. Seib et al 1, 400 feet from the south line and 200 feet from the west line, NW NW 23-5s-10w, was a wildcat location.

Two wildcats were abandoned: In Pike County, W. O. Allen, Jr.'s Electric Shovel Coal Co. 1, 200 feet from the south line and 1155 feet from the east line, SE SE 28-2s-7w, topped the Ste. Genevieve at 1327 feet and was plugged at 1566 feet. In Vigo County, Ben H. Nation's E. Boyce 1, SE SE SW 33-11n-9w, was abandoned at 2195 feet.

P. N. Wiggins and H. M. Hortin's State Life Insurance Co. 1, wildcat in the SW SW NW 14-1s-12w, Decker Township, Knox County, resumed drilling after a short shutdown. Using rotary, the test was drilling the Pennsylvania series at 1505 feet last week.

Kermit well-pressure plant requires compressors

Kermit, Texas.—Smith Bros. Refining Company is installing compressors at its well-pressure natural gasoline plant in the Kermit field, Winkler County, as result of the steady decline of reservoir pressure. The plant, located on PSL Section 11, Block 26, was placed in operation October, 1936, with a rated capacity of 50,000,000 feet of gas daily. The conversion work is to cost about $300,000.

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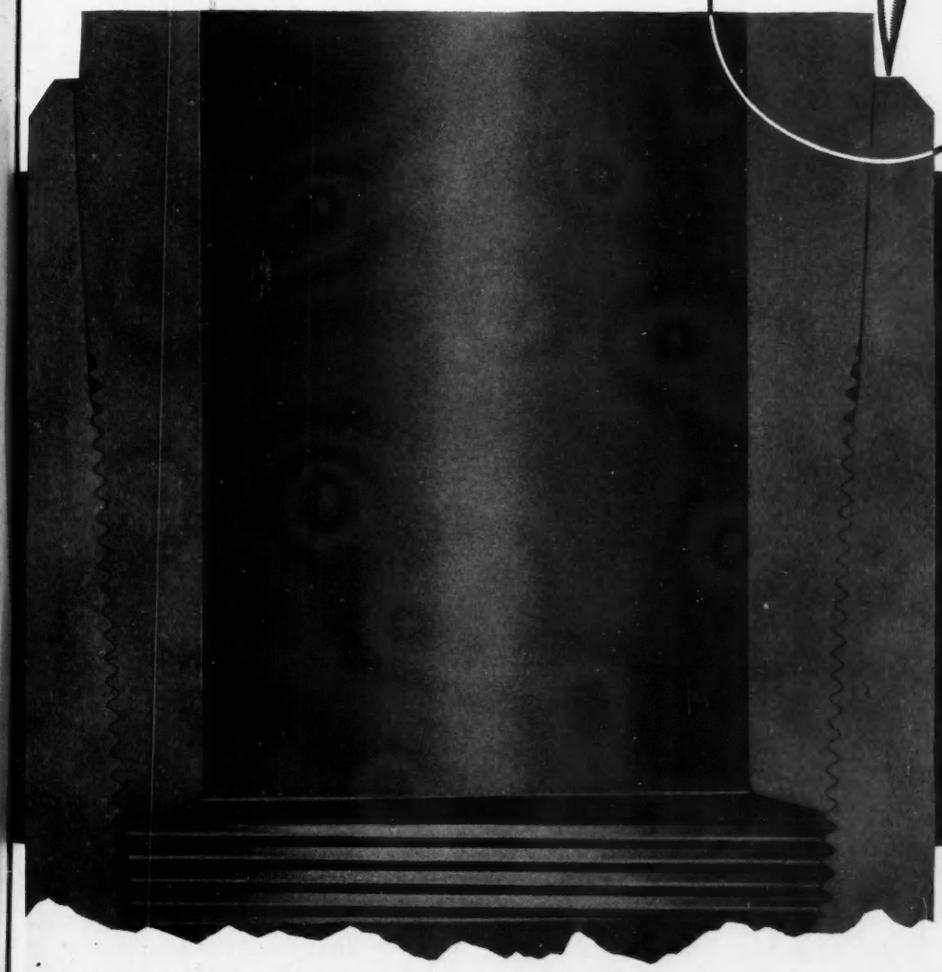

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Oklahoma

Patsy finds Viola lime pool in McClain County

Tulsa.—Patsy Oil Company opened a new Viola lime pool in southeastern McClain County when Garrett 1, NW NE NE 16-5n-3e, south of spotted production in Pottawatomie County and 4 miles west of West Beebe pool, Pontotoc County, flowed 680 barrels in 17 hours through an adjustable choke. Pay horizon was 3485 feet to 3623 feet. Two locations southeast an old producer was abandoned. Dry holes were drilled to the northeast and southeast of this producer. Viola lime checked 75 feet higher in Garrett 1 than in a test a mile northwest which went to 3825 feet.

Phillips Petroleum Company brought in Kiowa County's largest producer in Hobart pool, when Warner 1, NEc SE 19-7n-17w, a southwest offset to the discovery well, flowed 194 barrels the first hour, when deepened from 1057 to 1061 feet. This conglomerate pay horizon correlates with the discovery well which was estimated good for over 1500 barrels daily. Warner 2, NW NE SE 19-7n-17w, offsetting Warner 1 to the west, was immediately staked by Phillips. The fourth producer is shut in awaiting an outlet. Black Gold Refining Company, Oklahoma City, has been buying the crude and shipping it from a loading rack at Gotebo. Bell Oil & Gas Company also has purchased some of the oil at Granfield, by trucking.

Another large Hunton lime well was indicated for the Butcher area, northwest of Earlsboro, Pottawatomie County. C. W. Neville's Cowan 1, SEc NE 35-10n-4e, a west offset to the discovery well, perforated at 4297-4330 feet in Hunton lime and oil rose to the top of the casing. On acidizing with 1000 gallons, it flowed over the top of the derrick before being shut in. Tankage was erected and a production test run.

Harper-Turner defined Butcher to the southwest when Robinett 1, SE NE NW 2-9n-4e, ½ mile southwest of the pool opener, was abandoned at 4550 feet in Wilcox sand. Cowan 1, NEc SE 35-10n-4e, a southwest offset, perforated Hunton lime at 4305-45 feet with 80 shots and after acid treatment was swabbing an undetermined amount of oil. A south offset, Deep Rock Oil Corporation's Mickish 1, NWc SW 36-10n-4e, plugged back with rock to 4308 feet, where it was making 70 barrels daily from Hunton lime.

Southern Oklahoma watched another prospective wildcat fail on a drill-stem test. Johnson-Kemmitz Drilling Company and McGraw Oil Company's Neff-Godfrey 1, SW SE NE 14-6s-6e, near Madill, filled 700 feet with mud and salt water on a test at 4453½ feet in Simpson sand. Other small shows up the hole may be checked before abandoning.

Southeast of Elk City, Continental Oil Company again perforated pipe at Proctor 1, C NE 28-10n-20w, at 10,939-964 feet without a showing. Pipe will be perforated further up the hole.

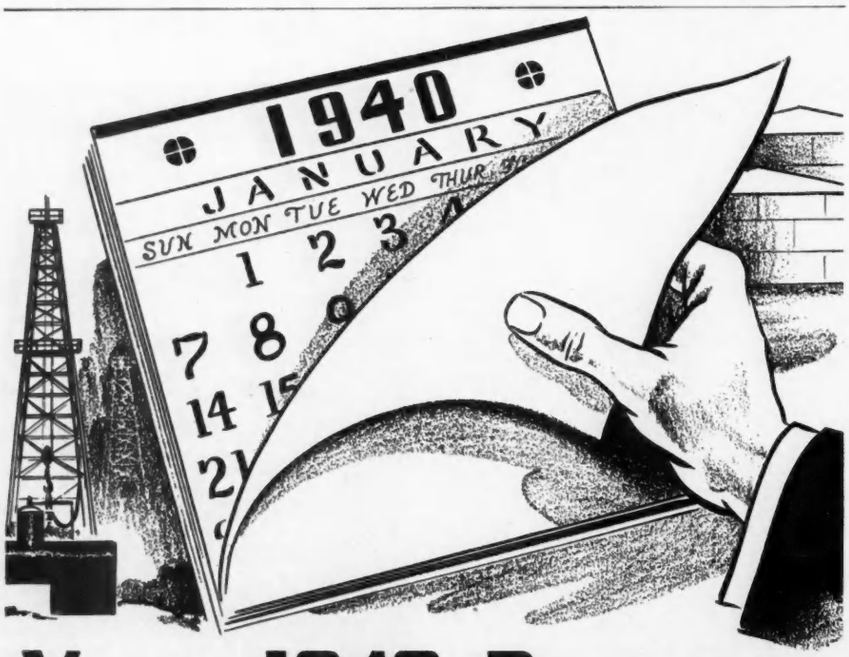
Gulf Oil Corporation continued to test at McClue 2, C SE NE 28-2s-3w, Carter County. Five-inch casing was perforated at 5889-5920 feet in Viola lime, which was acidized with 5000 gallons. A 253-barrel oil load was used and packer set at 5886-87 feet. After standing a number of hours and then opening, it failed to show. It may be re-acidized or perforated in another section.

In the west extension area of Altus pool, Jackson County, Gulf Oil Corporation drilled to 1542 feet at Barrett 3, NEc SW 10-1n-20w, where it pumped 23 barrels of oil in 14 hours. The corporation has farmed out 5 wells and is drilling 2 others.

Fish-Sasakwa area, Seminole and Hughes County, had its second failure as Stanolind Oil & Gas Company and others abandoned Reed 1, SWc NE 6-6n-8e, at 4259 feet in watery Wilcox sand.

Alma pool, Pottawatomie County, was extended as Alma Oil Company completed Johnson 3, SE NW SE 19-6n-5e, for 325 barrels of oil in 24 hours. Earlsboro sand at 2663-81 feet was shot with 20 quarts. Johnson 4, was drilling below 2635 feet and expecting top of sand shortly.

George L. Pace completed running 5-inch casing at Haer 1, SE NW SW 31-10n-5e, in newly discovered Pace pool, Pottawatomie County. Viola lime was topped at 4381 feet and dolomite at 4430 feet. Hole is bottomed at 4478 feet.



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Kansas

Westgate-Greenland open pool near North Canton

Wichita. — Westgate-Greenland Oil Company's Chindberg 1, C N½ NE SE 18-18-1w, 5 miles northeast of North Canton, McPherson County, opened a new Mississippi chat pool. Chat, topped at 2763 feet, had saturation at 2781-88 feet. More than 1000 feet of oil filled the hole after Chat was acidized with 1000 gallons. The test was being swabbed.

A wildcat 10 miles north of Stoltenberg pool, Ellsworth County, has possibilities of a pool opener in Arbuckle lime. Cities Service Oil Company's Padlena 1, Section 26-14-10w, cemented 5-inch casing at 3107 feet to test saturated lime at 3103-07 feet.

Walters Extended

Walters pool, Ellis County, was extended ½ mile westward when Frank Hollow completed Thomas 1, C S½ SE SE 3-12-18w, for a daily potential of 631 barrels from Arbuckle lime at 3658 feet. Alpine Oil & Royalty Company's Duncan 1, C S½ SE NW 8-20-11w, Barton County, which established a depthograph potential of 4935 barrels from Arbuckle lime, has been called a Silica pool extension.

Jones' Chance 2, NEc SW NE 21-32-5e, has yet to take a production test from Bartlesville sand, but has been classed as an extension for Frog Hollow pool, Cowley County.

Mid-Western Oil Company of Colorado was drilling ahead at Serwon 1, SEc 18-11-24e, Forest City Basin, Wyandotte County, after getting a shallow show of oil at 390-412 feet that may be tested.

Between Barnholdt and Hodge pools, Rice County, W. C. McBride et al's Hodge 1, CS½ SE NE 25-20-6w, topped Mississippi Chat at 3274 feet and cemented pipe at 3278 feet, four feet off bottom. It is reported running slightly high on the pay zone.

Southeast of South Sittner pool, Stafford County, Stanolind Oil and Gas Company's Hitz 2, C W½ SE NW 2-22-12w, was a maximum well of 3000 barrels after acidizing pay at 3571 feet.

Four miles north of Gates pool, Stafford County, Charles Seaney et al's Brown 1, SWc SE 1-21-13w, set pipe and will test Arbuckle lime at 3522 feet.

Kansas Nomenclature Committee joined 2 pools and named 5 new ones discovered since September 28. Wherry and Wherry South pools, Rice County, have been joined and called Wherry. The area covered includes Sections 31 and 32 in 20s-7w; Section 36-20s-8w; and Sections 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 14, 15, 16, 17 E½ 22 and W½ 23 in 21s-7w.

Trapp pool, Russell County, has been enlarged to embrace Schneider pool in S½ S½ 26 and N½ 35-15s-14w. This was a result of the completion of Phillips Petroleum Company's Mollie 4, CNL NE 35-15-14w, an Arbuckle lime well with a potential of 1463 barrels daily.

Krier, Harzman and Feltes were new pools for Barton County. Rahn was a new Bartlesville sand pool for Cowley County and Orth East is a quartzite pool in Rice County.

California

High gravity oil obtained from well in Coles Levee

Los Angeles.—Coles Levee, a Kern County field that attracted considerable interest some time ago when Standard Oil Company of California reported completion of a well producing 55-gravity oil, gained additional prominence last week through completion of Ohio Oil Company's KCL F-5, Section 10-31-25, at 9271 feet for 500 barrels of 58-60 gravity oil. This accomplishment is expected to speed up work on the 17 projects underway in the field as there is a ready market for lighter oil in California.

An unusually high initial production rated at from 5000 to 7000 barrels per day was obtained through completion of Navy Oil Company's O'Donnell 1, Section 29-10-34, Santa Maria Valley field. The well is bottomed at 5695 feet; 7-inch casing was cemented at 5372 feet, and 5¾-inch liner landed at 5695 feet.

An extension attempt for Coles Levee is seen in announcement of location for Richfield Oil Company's James Slough 1, Section 8-31-25, west of Coles Levee and within 1½ miles of Ten Section.

West Montebello continues to lead the state in activity with 59 operations. Wilmington ranks second with 53, and Kettleman North dome third with 31. East Coalinga has 18, Coles Levee has 17, and Coalinga Northeast has 12.

West Texas

Sand Hills extension test flows 218 barrels in 3 hours

Midland, Texas.—Major expansion for the Sand Hills field, Crane County, materialized when Humble Oil & Refining Company et al's J. B. Tubb 33, near SE NE SE PSL Section 7, Block B-32, flowed 218 barrels of oil in 3 hours on preliminary test after using 4000 gallons of acid in Permian at 4250-4400 feet. It is a mile southeast of production, and 1⅛ miles east of a recently completed extension. Development of acreage to the east and northeast of the older section of the field, which has been on production for 9 years, has proved sufficient acreage to prolong drilling for several years if conducted on a conservative basis as in the past.

Gulf Oil Corporation's W. N. Waddell et al 12, near C NE PSL Section 30, Block B-26, intermediate test for the Sand Hills and McKnight areas, developed 4,393,000 feet of dry gas from broken lime at 2650-2801 feet. Production has been mudded off to deepen. This semi-wildcat logged top of Yates at 1430 feet, with an elevation of 2626 feet. Gulf Oil Corporation's Waddell 28, NE NF SW PSL Section 11, Block B-23, located in the Gulf-Waddell field, northeastern Crane County, earned a potential rating of 9832 barrels of 33.4-gravity oil, based upon 6-hour test, after using 5000 gallons of acid at 3500 feet.

Cedar Lake pool, northeastern Gaines County, recorded its second producer when Stanolind Oil & Gas Company's American Warehouse Company 1, C SE SE D&W Section 5, Block H, west offset to its discovery, gauged 983 barrels oil initial through 1-inch choke, using input gas-air mixture to make the well flow steady. Broken pay, amounting to about 42 feet of saturated zone, was logged between 4570-4740 feet. This zone was treated with acid, then shot with 760 quarts of nitro at 4570-4720 feet. The company's Riley 1, 3½-mile northwest outpost and on the same structure, failed to show for a producer after swabbing down with cable tool unit, and will be acidized and shot. Streaks of lime between 4762-4864 feet carried nominal saturation and porosity. A small producer is anticipated. Top of brown lime was called at 3810 feet, and solid lime at 4435 feet with an elevation of 3149 feet.

Sidetracking operations are underway on 2 tests in the Seminole field, Gaines County. Amerada Petroleum Corporation's Robertson 1, most easterly producer that was completed at 5112 feet, March, 1938, with tools lost on bottom, has cemented whipstock at 5060 feet to drill by the junk and take in the lower pay. Atlantic Refining Company's Riley 1-B, which lost drill collar in hole during a gas blowout at 3365 feet, plugged back and was drilling in new hole with 6¾-inch bit at 1500 feet.

Atlantic Refining Company (Sloan-Zook et al's) Fitzgerald 1, northeastern Yoakum County wildcat, was drilling with tools at 5081 feet, with an elevation of 3617 feet. No shows have been recorded. It is below the water level recorded by The Texas Company's Mallett 1, small pumper in southeastern Cochran County.

Half-mile west extension for the mid-section of the Bennett field, Yoakum County, is indicated by Helmerich & Payne's Bennett 1, NEc Section 697 feet. The hole filled 1500 feet with oil from broken pay at 5130-5265 feet. A production test was due late last week after a nitro shot.

Having penetrated 744 feet of Ellenberger without encountering any appreciable shows of oil or gas, and no water, Continental Oil Company et al's Todd 1, Crockett County wildcat, was idle at 7000 feet. It may be deepened before plugging back to try and make a producer near the Simpson-Ellenberger contact at 6256 feet.

Scurry County Interest Revived

Revival of interest along the northwest trend of production from the Sharon pool, Scurry County, occurred when D.

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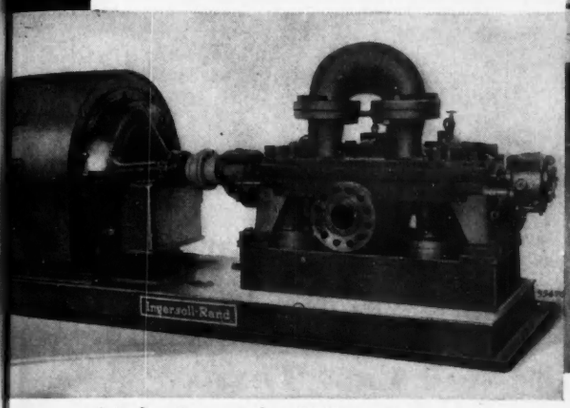
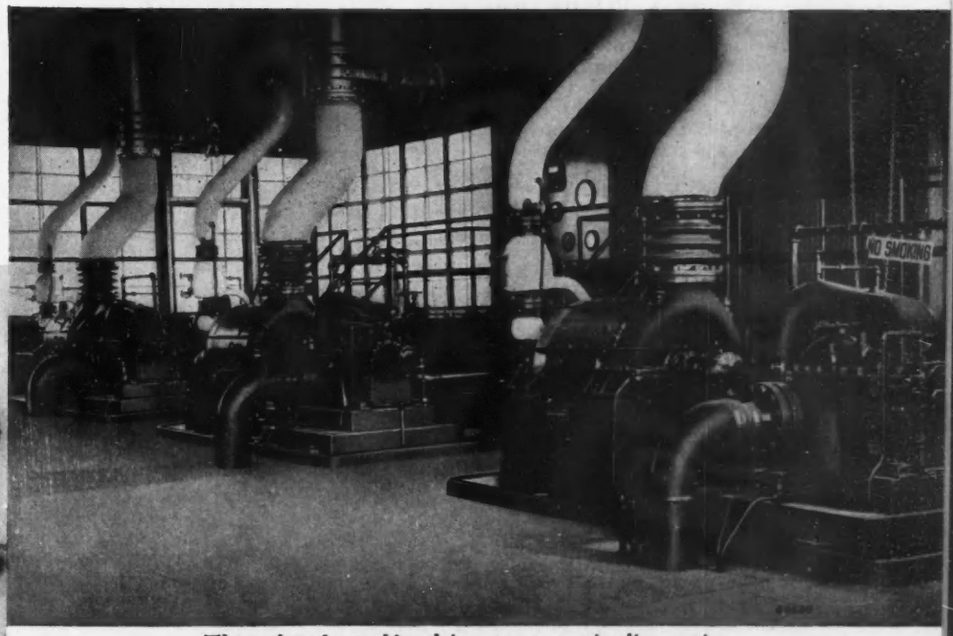
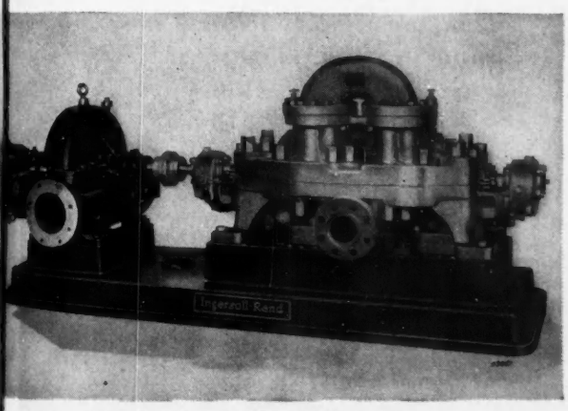


6 inch—6-stage Class RTS pump.



Three of twelve turbine driven pumps on pipe line service.



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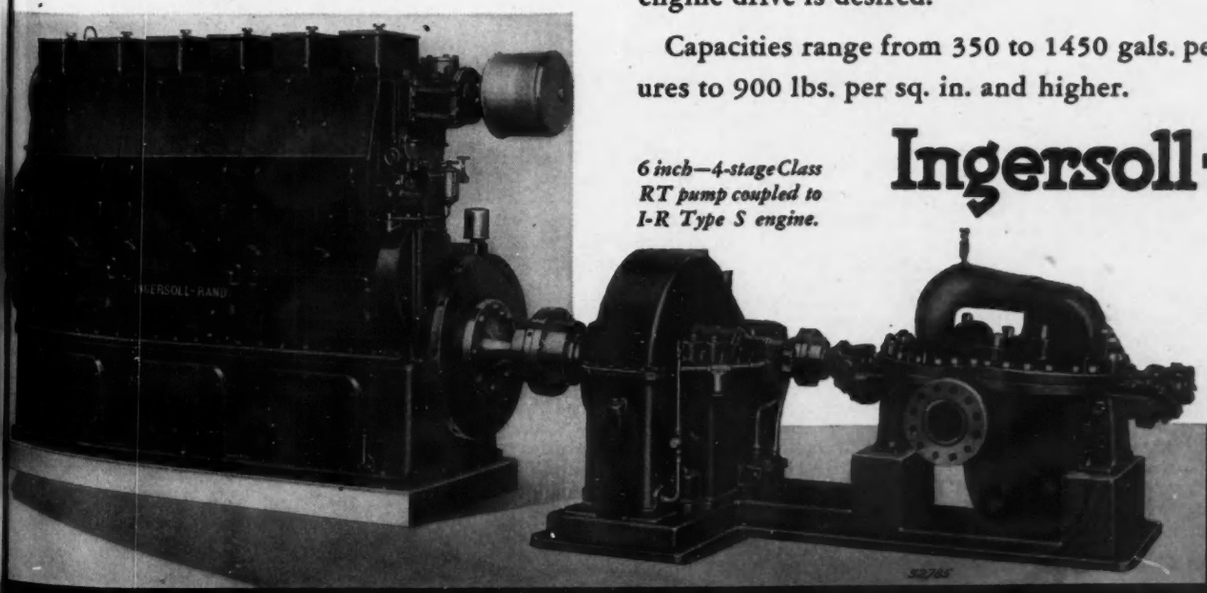

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& R. Oil Company (successor to Robinson Drilling Company) developed an average size producer in working over A. C. Martin 1, C NW SW H&TC Section 147, Block 97. Situated ⅞ mile northwest of nearest Sharon pool production, Martin 1 was drilled to 3515 feet, and when plugged back to 2590 feet for nitro shot and acid at 2420-92 feet indicated a 10-barrel pumper in January, 1938. This development preceded completion of the Sharon pool discovery. In working over the test the hole was plugged back to 2525 feet for a second shot with 780 quarts of nitro at 2380-2495 feet, resulting in an initial yield of 250 barrels by swabbing. Top of lime was called at 1514 feet with an elevation of 2234 feet. Petroleum Producers Company's Sterling Magnolia 1, NE NW NW H&TC Section 123, ½ mile southeast of Sharon production, passed up sandy-lime pay rated good for 10 barrels daily at 1760-70 feet, and was drilling at 2030 feet.

Approaching lease expirations in the Johnson pool, which is in reality a northwest continuation of the Foster field, Ector County, promises to result in the starting of a number of outposts in the near future. An east extension to the Johnson pool will be sought by Black-Steele et al in contracting to drill a test on N½ T&P Section 38, Block 43, T-1-S. The tract was assigned by Continental Oil Company for 1/16 over-riding royalty, with mineral rights reserved below 4500 feet. However, if the first test is dry in the regular Permian, owners will be given rights to the 5500-foot level if the hole is carried to the Holt pay. The latter lower middle Permian zone, which has yielded 3 wells on west edge of the North Cowden field, is to be the objective of a semi-wildcat test to be drilled by Stanolind Oil & Gas Company on the W. F. Cowden ranch, near C SE SW T&P Section 4, Block 43, T-1-N, near the Andrews County line, half mile west of a small producer that was plugged back from sulphur water at 4971 feet. Stanolind Oil & Gas Company paid $125 per acre, $25 per acre cash, for lease on about 1000 acres to support the above deep test.

Texas drilling permits show increase for week

Permits for drilling 243 new wells in Texas were approved last week by the Texas Railroad Commission, 98 more than were allowed the week before.

Four permits were approved in the East Texas field, including three in Gregg and one in Smith County. From the remainder of the East Central Texas area, five locations were reported.

The commission approved 47 permits in West Texas with 14 in Ector and 13 in Yoakum County. West Central Texas operators reported 17 new locations.

Gulf Coast producers listed 54 locations, including 13 in Wharton County, while 42 permits were reported from Southwest Texas, with 11 in Duval County.

Holding first place in the state was the North Texas District with 65 permits, including 20 in Wichita and 14 in Archer County. Nine permits were granted in the Panhandle.

North Texas

Nocona gets third oil pay; wildcat shows in Bend lime

Wichita Falls.—A third producing horizon for the Nocona deep pool, Montague County, was uncovered in the Bend lime by Stanolind Oil & Gas Company's Kate Davis 2, Lot 59, W. J. Wells Survey, after passing up nominal shows in the regular Strawn zones at the 4300- and 4600-foot levels. Top of the Bend was tentatively placed at 5202 feet, with saturation at 5228-49 feet. Formation tester developed a steady flow of oil after blowing a head of air then gas. A string of 5-inch pipe has been ordered cemented in the Bend to complete. Davis 2 is in the north portion of the pool and a west offset to a 4300-foot producer.

The oil showing from the Bend provided a surprise as Rogers & Rogers' Astley-Texaco 1, north offset to the pool discovery, did not encounter saturation that warranted testing in the Bend, topped at 5208 feet, or 10 feet higher structurally. The latter also proved dry in the Ellenberger at 5390-5489 feet, but made a flowing well in plugging back to the 4600-foot Strawn. Bridwell Oil Company's Reynolds 1, wildcat 1 mile northeast of the townsite, logged top of Bend at 4147 feet, about 100 feet higher than Davis 2, and encountered fair saturation that may attract another test. However, it was abandoned in Ellenberger at 5387-5403 feet.

Walter H. Gant and Continental Oil Company's Brown 1, prospective Bend lime producer for western Montague County, was slated to run 7-inch pipe for a production test with the hole bottomed at 6900 feet. Top of Bend was called at 6112 feet. Saturation was logged at intervals below 6428 feet. United Producers Company and Continental Oil Company's Rich 1, east outpost for the Bonita pool, eastern Montague County, developed water from an unknown source after testing 1 barrel oil per hour natural. Production is from Strawn section, and casing was gun-perforated at 2994-3002 feet, 3030-46 feet and 3451-95 feet after plugging back from solid granite at 3738-40 feet. The source of water has not been ascertained.

Clay County Discovery

West central Clay County recorded a discovery completion on the Jolly geophysical prospect when Continental Oil Company-Superior Oil Company (California) and A. R. Dillard's Ross Bros. 1, Block 31, W. Walker Survey, flowed 142 barrels of 43-gravity oil via ¾-inch choke on a 3-hour proration gauge from Bend pay at 5358-5400 feet. The well failed to come up to expectations as it had been shut in for more than a week after using 8000 gallons of acid at 1000 pounds pressure, and pressures receded rapidly during the short potential gauge. Pressure on casing dropped from 950 to 315 pounds, while tubing pressure was lowered from 715 to 185 pounds. Ross Brothers 1 is 4½ miles south of Jolly, and the same distance northwest of the Halsell 4700-foot pool. Top of Home Creek (Canyon) lime was logged at 1990 feet, and the K-M-A lime at 4090 feet. First Bend, or Smithwick lime, was recorded at 5350 feet by electrical log.

Frabor-Hodges Corporation and Sinclair Prairie Oil Company's Scaling 1, southeast outpost for the Kinder pool, was drilling at 4950 feet, having failed to produce in the Strawn.

Cooke County offered a prospective wildcat strike when Big Indian Oil & Development Company's M. P. Morton 1, Section 1, E. T. Ry. Survey, A-365, 6 miles south by east of Gainesville, encountered oil saturated sand at 2512-17 feet. Operations were halted to run a string of pipe to the 2505-foot level and make a production test. It is about 3½ miles south of the Anderson-Kerr pool, which produces from shallower zones.

Walnut Bend pool, Cooke County, was extended a short distance to the southeast through completion of Magnolia Petroleum Company's Ramsey 1, SWc C. Furinash Survey, flowing 175 barrels 38.6-gravity oil natural in 6 hours from Strawn at 4816-42 feet. It is the shallowest producer in the area.

East Texas

Houston County wildcat has show in Upper Trinity

Tyler, Texas.—An oil strike from the Upper Trinity is indicated for northeastern Houston County. Shell Oil Company (formerly J. C. Wynne's) G. E. Dorsey 1, M. Sallas Survey and 4200 feet south of a small Woodbine producer in the Percilla pool, showed free oil in rotary returns from sandy-lime in the upper Glen Rose at 8550-76 feet. Drill-stem test at 8541-76 feet yielded drilling fluid mixed with free oil, testing 36-gravity, when tool was opened 12 minutes. Bottom-hole pressure was 1400 pounds. Drilling was scheduled to be resumed late last week to continue to the Lower Trinity as originally scheduled. If production is not found at a lower level, the test will be plugged back to try for a completion in the upper Glen Rose, which was topped near the 7962-foot level, with an elevation of 393 feet. The latter horizon has failed to yield commercial production in the Woodbine belt, and Dorsey 1 is the first promising bid.

Shell Oil Company's Campbell 1, 2½ miles northeast of gas-distillate production in the Chapel Hill pool, eastern Smith County, logged top of massive anhydrite at 7135 feet, with an elevation of 449 feet, and was drilling anhydrite at 7370 feet. On this marker it is 131 feet lower on structure than Hunt Oil Company's discovery, which was completed at 7528 feet. The latter produced 8750 barrels of distillate during November in supplying 25,360,000 feet of gas to leases in the East Texas field. Sun Oil Company's Huddle 1, 2 miles south of the producer, was drilling at 500 feet.

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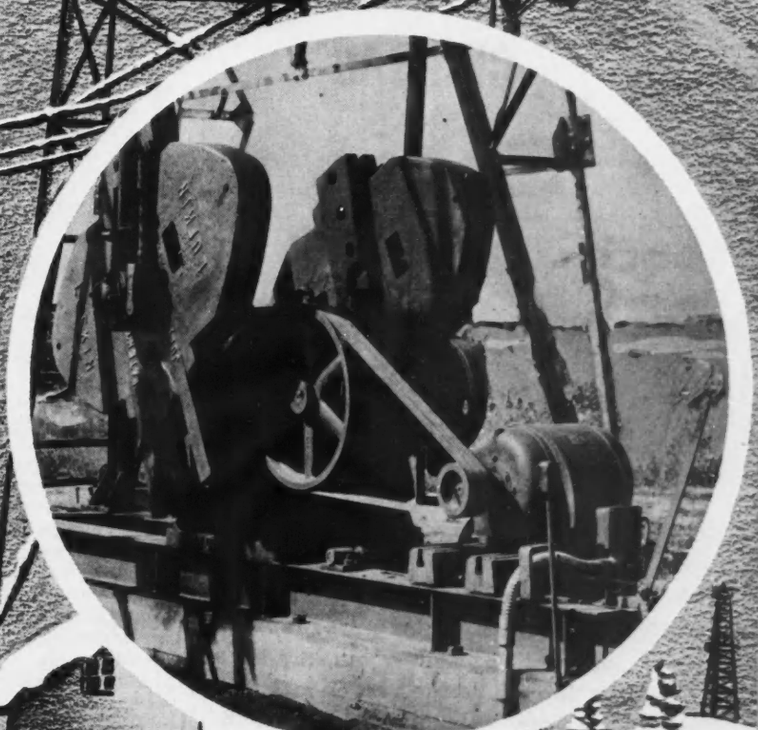

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Southwest Texas

Frio sand strike expected to blanket West Ranch

Corpus Christi.—West Ranch, South Texas Gulf Coast's outstanding discovery of 1939, gained further importance this week as a third sand added millions of barrels to the potential reserve of the area. The new discovery at 5770 feet in Frio zone is expected to blanket the field and to be one of the key sources of production.

A potential test on Lonnie Glasscock's J. H. Drummond 10 rates it at better than 701 barrels of 31.4-gravity pipe line oil per day through ¼-inch choke, or a capacity well. On a flow test of 8 hours duration, the well made 233.51 barrels of crude under 775 pounds working pressure and 775 pounds closed-in pressure on casing. Gas/oil ratio was very low.

The test, most northwesterly operation in the field, cored the sand at 5770-79 feet, and set casing atop the pay. Completion was through screen.

Completion of this test places several hundred acres of heretofore condemned acreage in the line of play. Superior Oil Company has acquired much of this acreage and is drilling the first of a series of tests.

The new producer is in the same sand indicated in Greer et al's east outpost and in Magnolia Petroleum Company's outpost, both of which were abandoned or plugged back for completion at shallower levels. These tests indicate that the horizon will blanket the field.

In Bee County, a new distillate field, apparently in the top of the Vicksburg formation, was opened through completion of Coronado Corporation's C. E. Heard 1. The well, in the Michael & O'Toole Survey and 10 miles southeast of Beeville, was carried to 5522 feet, plugged back and completed at 4766-76 feet through perforations. It flowed considerable distillate along with a large volume of gas. When shut in the pressures mounted to 1925 pounds equalized on casing and tubing.

San Patricio County led in new wildcat locations, four being announced during the week. This county has been dormant for several months from a wildcatting point of view.

In Nueces County main interest centers around Wellington Oil Company's operations in Clara Driscoll district, where Martin 1, a mile east of the south pool, was waiting on gauge after perforating at 5255-63 feet, while Clara Driscoll 1-B was preparing to jet from perforations 5290-5302 feet. It is 3000 feet east of the north field. Both wells open new producing zones as well as extend the field.

A second sand for Magnolia City, this one at the base of the Frio, opened the way to new development for the Jim Wells County area. On drill stem test Meyer and Simons' Reynolds and Richardson 1, 1600 feet northwest of the discovery, flowed pipe line oil in 150 minutes. Pressure mounted to 140 pounds during the test of the pay at 5704-14 feet. This well is now flowing several barrels of 45-gravity crude per hour through a small choke.

A definition to LaGloria on the south was recorded in its first failure when Magnolia Petroleum Company's Rust 1, the first well drilled on the Brooks County side of the field, was abandoned at 7427 feet.

Three Wilcox wildcats are at testing stage

San Antonio.—Three Wilcox sand tests in South Texas were at the testing stage as the week closed. Two, however, had junked holes and were completing at higher levels.

In Colorado County, Davis & Company's McLane 1-A, near the Garwood pool, was coring ahead after setting casing at 9780 feet. It topped a sand stringer with oil showing at 9760 feet, apparently the top of the Wilcox formation. The test showed for a distillate producer in the Carrizo zone, but went ahead.

Bee County's Wilcox sand test is Anderson-Prichard and Mills Bennett's Robinson 1, which went to 7921 feet. It plugged back, sidetracked and redrilled the Pettus zone. It showed for a producer in the 3900-foot sand and went ahead to around 4400 feet, where a string of casing is scheduled to be set for completion. Another well to the deep pay is contemplated. The well, in the West Tuleta field, found several sand stringers below 7550 feet and attempted to blow out from the present total depth.

Trying to get out of control from 8957 feet, the bottom of the hole, American Liberty Oil Company and Tide Water Associated Oil Company's Bruni 7 in the Bruni field of Webb County has been plugged back and is being completed in Queen City sand at 5600 feet. The test also has been giving trouble at this level, showing a heavy gas pressure. It is in the Bruni area, producing from the Jackson, Yegua and Cook Mountain zones.

Drilling program promised for Adami; new pool looms

Laredo.—Possibility of a new pool and a drilling program in another shallow area placed Mirando district back in the play in South Texas. Marketing facilities likely will result in the drilling of a number of wells in the Adami area.

Completion is expected shortly on a 4-inch line from Adami field of Webb County to the SRC pool of Duval County for the Amsco Pipe Line Company. The line will give this pool a definite outlet and will remove a 16-cent hauling charge now assessed against production. Magnolia Petroleum Company will pick up the oil at the SRC outlet and will deliver it to the Amsco concern in Corpus Christi. A spur line will be laid to Munson pool immediately, thus giving this area a similar outlet. Adami completed 6 wells in the 1000-foot zone during the past week and likely will duplicate the number this week. A number of locations remain to be drilled.

Duval County apparently had a new pool in the making. Cox & Hamon's

Gorman-Hoffman 1, south corner of Section 113 and 2 miles east of the Hoffman field cored a sand section 2015-39 feet, apparently the Cole zone, and recovered some oil and mud on a drill-stem test. The well was carried ahead to 3309 feet, but plugged back and pipe set at 2250 feet. It will be completed through perforations.

Bill Goldston took over the Mayfair Oil Corporation's holdings in the recently discovered Gutierrez pool of Jim Hogg County and has commenced a well ½ mile northeast of the discovery well, completed just below 3200 feet in Loma Novia sand for a small pumping producer.

Duval County's deep wildcatting play brought more failures. Blanchard's Parr 1, 1¾ miles northwest of the Muralla field was abandoned at 4250 feet. The location was changed and a second well is being drilled out of the east corner of Section 22. Gravis et al's Vaello 1, 2½ miles northeast of North Sweden field, has been abandoned at 6023 feet. Hiawatha Oil & Gas Company's Southland 4-A, in the Southland pool, after having been abandoned at 5485 feet, is being drilled below 6000 feet.

Wildcat on much explored Green prospect gets show

Beeville.—Green prospect, explored for the past 10 years without avail, apparently is going to pay off. Echols, Cezeaux et al's Newberry 1 is preparing to drill plugs after going to 3012 feet. The test had topped the sand in the Pettus zone at 2924 feet, but found broken formation to 2942 feet. It cored 10 feet of good oil sand, then went into shale and sandy shale to the total depth. Pipe was landed on bottom and production will be obtained through perforations.

The well is located in the northwest corner of Block 30, Dalton Subdivision, and 1100 feet north of Newberry 1, drilled several years ago by Fort Bend Oil Company.

Postpone effective date on Pickett Ridge gas order

The Texas Railroad Commission has postponed until January 15, 1940, the effective date of its order placing gas wells in the Pickett Ridge field, Wharton County, on a volumetric basis. Because another hearing on this rule has been scheduled for January 10, it is possible that the rule may not become effective.

Adami spacing

The Texas Railroad Commission has issued an order providing for 5-acre spacing in the Adami field, Webb County. Wells may be located 165 feet from lease lines and 330 feet apart.

However, because proration is on straight acreage and as much as 10 acres may be assigned to one well, wider spacing for the field may result.

Tomoconnor orders

The Texas Railroad Commission has issued an emergency order providing for standard 20-acre spacing in the Tomoconnor field, Refugio County. No hearing on permanent rules was scheduled.

Texas Gulf Coast

Two deep tests promise Anchor double extension

Houston.—Anchor, Brazoria County, will probably be extended 6000 feet northeast and 2200 feet northwest next week as 2 deep tests are running casing for a production test. Humble Oil & Refining Company's Mettler 1, northeast of the discovery well, is bottomed at 10,617 feet; 7-inch casing is being set. The well has logged good shows up the hole from 9480 feet on down. Northwest of the discovery, Glenn H. McCarthy's Salmon 1 is running 7-inch casing to bottom at 10,756 feet. The well logged broken sands at 10,643 to 10,686 feet which had a show of oil. It also had shows from 9390 feet on down.

A half mile southwest of the discovery well at Chocolate Bayou, Brazoria County, Glenn H. McCarthy's Andrau 1, H. T. & B. No. 5, was drilling in shale at 9612 feet last week after an electrical log was reported to have failed to show any oil sands of importance. The discovery well was completed below 9800 feet. McCarthy's Houston Farms Development Company 2 was drilling in shale at 9702 feet after

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having logged a sand with a show of gas and distillate at 8882 feet.

Humble Oil & Refining Company's Smith 1, Bonney area, W. D. C. Hall Survey, Brazoria County, was abandoned at 10,007 feet in shale with no shows of oil reported.

In the Sandy Point area, Brazoria County, Jack Frazier's Darrington State Prison Farms 1, A. McFarland Survey, was coring in sandy shale below 7298 feet at the end of the week after having cored salt water sands at 7091 to 7175 feet, 7175-92 feet and at from 7204-7273 feet. The test is projected to the Vicksburg formation.

J. R. Turnbull has abandoned another test at Cedar Bayou, Chambers County, after Kirby Petroleum Company 2 failed to find production in the Marginulina-Frio sands at 6660 feet. One foot of sandy shale with a show of oil was cored at 6390-91 feet and salt water sand was logged at 6540-55 feet.

At Cedar Point, Chambers County, Standard Oil Company of Texas failed to make a producer out of State 55-119 in both the Frio and Miocene sands. The first showed salt water at 6250 feet and the hole was plugged back and 2 tests were made of Miocene sand, the last being at 3580-83 feet. Casing was perforated with 8 shots and a 20-minute drill-stem test showed salt water.

On the flank of Turtle Bay, Chambers County, Stanolind Oil & Gas Company abandoned Robertson-McDonald 1, M. A. Carroll Survey. The hole was plugged at 6642 feet after coring salt sands from 6615 to 6622 feet.

Effective December 10, 1939, Humble Oil & Refining Company took over H. C. Cockburn's operations at the new Rosenberg field in Fort Bend County for $250,000 cash and an obligation to drill 2 wells. After these are completed the company is obligated to pay another $250,000 cash and an additional $1,000,000 out of ⅛ of the oil produced and H. C. Cockburn is also to receive ⅛ royalty. Humble acquired the discovery well and over 5200 acres in the area and will probably start developing the new field after Fred Browning's Socha 1, 1600 feet west of the discovery well, is completed.

Rosenberg, an old Humble geophysical prospect, was later reworked by Cockburn. The discovery well for Rosenberg was about 160 feet higher than Perry Hunnycut's Windward 1, southeast of the discovery well and 150 feet higher than Humble's Miller 1, north of the present production.

In the Juliff area, Fort Bend County, Gulf Oil Corporation is reaming down to 8380 feet to set 7-inch protection casing in a potential pool opener. The well tried to blow out some time ago when a high-pressure gas sand was logged at 8370 to 8380 feet, but was brought under control.

A quarter mile southeast of production at Fairbanks, Harris County, Kirby Petroleum Company completed Hillbrenner 1, T. M. Dorsett Survey, last week through perforations at 6831-32 feet for 124 barrels of 37.2-gravity oil daily through a ⅛-inch choke, with a tubing pressure of 850 pounds and a casing pressure of 2450 pounds.

South Louisiana

Drilling programs started at Barataria and Lafourche

Lake Charles.—Two new fields recently discovered in South Louisiana are starting off on drilling campaigns. Three new locations were announced at Barataria, discovered in Jefferson Parish by California Company, and two new locations were made at Lafourche Crossing, Lafourche Parish, which was discovered by Mikton Oil Company. Only the discovery well has been completed in each of the fields.

At Barataria, Carter, Perin and Brian made location for Rutley-Wiseman 1, 250 feet from the west bank of Bayou Barataria and midway between the north and south line of a 3-acre tract in Section 2-16s-23e; Geo. B. Conover's Conover Community 1 is 499 feet west of the west bank of Bayou Barataria and midway between the north and south lines of a 2-acre tract in Section 22-15s-23e, and Fohs Oil Company's E. M. Conzelmann 1 is 450 feet west of the west bank of Bayou Barataria and midway between the north and south lines of a 4.2-acre tract in Section 22-15s-23e.

Barataria was discovered by Adams-Rutley 1 when it came in flowing 888 barrels of pipe line oil daily through ¼-inch choke from 8204 to 8214 feet.

At Lafourche Crossing Mikton Oil Company announced location for Martinez 2, 1620 feet south of the discovery well in Section 133-15s-17e. E. H. Stickney's Thibodeaux 1 is from the southwest corner of Section 17-15s-17e and 360 feet northeast along northwest line of Section 17 and 349 feet east at right angles in Section 17-15s-17e. Both of the above wells will be drilled to the 10,130-foot sand found by Mikton Oil Company's Martinez 1.

Gulf Oil Corporation made a test of a new sand at Grand Bay, Plaquemines Parish, in Grand Prairie Levee Board 5-A, and recovered oil and salt water. The well cored oil sands at 8336 to 8356 feet, and the drill-stem test made in 10 minutes at 8330 feet showed a 950-pound pressure, 180 feet of oil cut mud, 90 feet of 40.4-gravity oil, and 120 feet of oil and salt water. The operators are drilling deeper to the regular producing horizon.

On the north side of Lake Long field, Lafourche Parish, Fohs Oil Company completed State Lake Long 11 last week after casing was perforated with 10 shots at 9070 to 9074 feet. It flowed 150 barrels of 38-gravity oil daily through a 12/64-inch choke. The hole was originally drilled to 10,197 feet.

New Sand Found

A new oil sand was discovered at Fausse Point, Iberia Parish, last week when The Texas Company completed State Lake Fausse Point 3 after casing

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was perforated with 24 shots at 4985 to 4993 feet. The well flowed 102 barrels of 36.9-gravity oil daily, 5 percent basic sediment and water, through a 10/64-inch choke, with a tubing pressure of 200 pounds. This is the best well yet completed at Fausse Point.

William Helis has abandoned another well on the Section 28 dome in St. Martin Parish. Levert-St. John 2 quit drilling at 8157 feet in shale. No shows were reported.

Shell Oil Company made 4 drill-stem tests on Jeanerette Lumber Company 3 at West Lake Verett, St. Martin Parish, in a new shallow sand. The hole was being carried on deeper to the regular producing sand. The shallow sand was cored from 6911-88 feet. The first drill-stem test, made at 6911-19 feet, recovered 74 stands of gas cut mud; the second, from 6972-84 feet, showed 240 feet of gas cut mud; the next, from 6983-88 feet, showed a faint blow and 150 feet of mud and oil and 510 feet of mud; and the last test, made at 6985-88 feet, showed no pressure and 300 feet of drilling mud.

In the Graben area between Gillis and English Bayou fields, Calcasieu Parish, Union Sulphur Company completed Castle 10 after casing was perforated with 30 shots at 6986-41 feet. It made 321 barrels of 39.1-gravity oil daily through ¼-inch choke, with a tubing pressure of 500 pounds.

On the flank of Starks field, Calcasieu Parish, W. T. Burton's test blew out from a new sand at 7225 feet just above the Vicksburg formation.

North Louisiana

Lisbon cooperative deep test has oil show in Lower Marine

Shreveport. — The Lisbon field, located in Claiborne and Lincoln parishes, discovered as productive of oil December 25, 1936, appears to have been proven productive of oil in the Lower Marine.

Lisbon Exploration Company's Roberta Vaughan 1, NW NE 36-21n-5w, Claiborne Parish, flowed 4 hours at the rate of 8 to 10 barrels per hour of 54.8-gravity oil after casing was perforated last week from 8844-61 feet. Operators later were forced to close in the well when separator and lines "froze."

The well, drilled to 8901 feet had shown salt water at 8354-83 feet but perforations there were finally squeezed off. It is the first test of the Lower Marine at Lisbon and is a cooperative test by operators in that field.

Another North Louisiana test, the deepest geologically ever drilled in this area, passed the 10,000-foot mark last week as Union Producing Company's Tensas Delta A-1, NE SW 8-22n-4e, Morehouse Parish, which logged Permian salt from 8114 to 9082 feet, drilled at 10,010 feet.

Stanolind Oil & Gas Company's Dillon 131, SE NE 14-21n-15w, drilled to 11,419 feet at Pine Island, Caddo Parish, continued testing various levels after plugging back to 9981 feet. In a test from 6918-63 feet this operation showed a little gas with mud and perforations were being squeezed off for another test higher up.

Arkansas

Another Columbia County test shows Smackover production

El Dorado, Ark.—Standard Oil Company of Louisiana last week swabbed Petty Stave Company 1, SE SE 4-17-21, Columbia County at Big Creek, looming as the sixth Smackover lime oil well for Columbia County. Total depth is 7999 feet and casing was set 5 feet off bottom. The well Thursday had swabbed down to 4700 feet and showed some oil on the swab's first trip.

A second well appears assured for the Dorcheat (Experiment) field, Columbia County, where one Smackover lime oil well is producing. The second test to reach the lime there is Lion Oil Refining Company's R. S. Warnock 1, NW NW 15-18-22, east offset to the discovery well, which is arranging to core at 9010 feet after having topped porosity at 8801 feet. Total depth of the discovery well is 9002 feet. Lion's test in a core from 8810 to 8830 feet recovered 1 foot of dense lime; 2 feet of slightly porous lime and 15 feet of porous oolitic lime showing gas-distillate.

The first failure for the Atlanta field, another Smackover lime oil field in Columbia County, which has four oil wells, appeared likely in Hunt Oil Company's McWilliams 1, C NW NW 15-18-19, which was shut down after coring to 8238 feet without satisfactory showing.

The northwest limits of the Magnolia field, Columbia County, were further defined when Grady H. Vaughn and associates abandoned W. L. Jameson 1, S½ S½ NE 15-17-20, as a salt water hole at 7824 feet.

Mississippi

Seventh well at Tinsley flows 21 barrels an hour

Jackson, Miss. — The Tinsley field, Yazoo County, added its seventh oil well last week, the third from the Eutaw (Blossom), in Jones & O'Brien's Jennie Stevens B-1, C SW SW 12-10n-3w, completed at 4895 feet, flowing 21 barrels of oil per hour through ¼-inch tubing choke, with tubing pressure 165 pounds and casing pressure, 20 pounds. The well had 20 feet of oil sand in the Eutaw topped at 4865 feet; elevation is 267 feet.

Three miles northwest of production at Tinsley Dome, T. B. Slick's Atkinson 1, NE SW 3-10n-3w, elevation of 116 feet, topped Selma chalk at 4562 feet, Eutaw at 4638 feet, and was cutting out stuck drill stem at 4972 feet.

Leasing and geophysical exploration show no signs of abatement. A great deal of leasing is still going on in Townships 17 and 18 north, Ranges 2, 3, 4, 5 and 6 east, Carroll County. J. R. Brown of McComb, Mississippi, has checkerboarded about 12,000 acres in Amite, Franklin, Lincoln, Marion, Pike and Walthall counties. W. W. Blocker of Houston has secured approximately 15,000 acres in Issaquena, Sharkey and Warren counties, in the delta section. H. T. Salter of Chicago secured several thousand acres in Township 21 north, Ranges 6 and 7 east, Montgomery County and in Township 20 north, Ranges 5, 6 and 7 east, J. W. Lawrence of Tulsa secured several thousand acres, part of which was assigned to C. B. Lynch.

Lauderdale County, east central Mississippi, is a new scene of leasing. Gulf Refining Company has completed an 18,000-acre block in northwest Lauderdale County and directly south of Meridian. Westbrook & Thompson of Fort Worth are negotiating for municipally owned lands.

J. P. Fraim of Jackson has leased approximately 30,000 acres in southern Lauderdale County in Township 5 and 6 north, Ranges 17 and 18 east. J. R. Smith is leasing in western Lauderdale County. Gulf Refining Company has completed a block in Township 9 north, Range 3 east in Madison County.

New Mexico

New gas horizon opened in High Lonesome area

Hobbs, N. M.—A new gas horizon for the southeast edge of the High Lonesome area, northern Eddy County, was recorded by C. S. Powell et al's Leonard-Levers 1, C NE SW 33-16s-29e, in developing a flow of 1,500,000 feet daily, with 810 pounds closed-in casing pressure. Production is from sandy-lime at 2255-65 feet, with an elevation of 3592 feet. It is 1¾ miles northeast of a small gasser completed by the same operators last April at the 2400-foot level.

C. C. Dodson et al's McElreath 1, SWc 3-16s-29e, 2-1/3 miles northeast of B. H. Nolen et al's shallow oil discovery for the High Lonesome pool, missed the projected oil horizon with only a small show of gas at 1865-70 feet, and was drilling at 1970 feet.

Two outposts for the Gates one-well pool, situated to the southeast of Loco Hills field, Eddy County, were awaiting production tests late last week after showing for oil producers while carrying open hole below surface pipe. Leo Manning et al's McClay 1, NE NW NE 21-18s-30e, cemented 7-inch at 2995 feet, having filled 2300 feet with oil in 4 hours after reaching oil pay at 3017 feet. Kersey & Company's Creek 1, NW NE NW 23-18s-30e, logged broken pay at 3265-81 feet, resulting in 2300 feet of oil before landing 7-inch at 3248 feet. Martin-Jones et al's Gates 1, midway between, opened the area last summer in making a pumper at 3245 feet.

Lea County came through with its overdue large quota of year-end locations in recording 11 new operations for 9 separate areas. Independents accounted for a majority of the tests. Barney Cockburn et al are starting Miller 5-A, C NE NW 26-17s-32e; Baish 5-B, C NE SW 27-17s-32e, and Baish 6-B, south offset to the latter, all in Maljamar. This area enjoys the largest production allowable per well in Lea County, owing to its relative position to Eddy County fields. The latter have a top allowable of 65 barrels daily, as compared to 45 barrels for Lea County.

Rocky Mountain States

Old Muskrat gas well makes area's largest flow

Casper, Wyo.—A flow of 75,000,000 cubic feet of gas daily, the largest current gas production in the Rocky Mountain area, resulted from cleaning out Sinclair-Wyoming Oil Company's Muskrat 2-C, NE SW NW 1-33n-92w, an old producer in the Muskrat gas field, Fremont County. The well originally completed in 1937 for 27,000,000 cubic feet of gas through perforations at 7560 feet after plugging back from 8112 feet in the Madison lime. Tubing was pulled and casing perforated with an additional 90 shots at 7535-58 feet (Lakota sand). This resulted in a flow nearly 3 times as large as the initial. Current flow is under a rock pressure of 1910 pounds while original pressure was 2175 pounds.

Continental Oil Company has announced intentions of redrilling an old Dakota producer on the extreme eastern edge of the Lance Creek field, Niobrara County. Rodeo-4 3, SE NE NE 35-36n-65w, originally completed in 1919 for a small producer in the Dakota beds at 3708 feet. More recent development of the Sundance and Minnelusa production in the present main sector of the field led to discontinuation of operations in this immediate area and the well was shut in and not produced commercially. Late developments of both Sundance and Minnelusa production along this northeastern "nose" of the Lance Creek structure has led to the decision to deepen. Location is ½ mile east of the nearest producer.

North LaBarge Oil Company is running casing for production test in Government 1, SWc NE SE 8-35n-65w, 3 miles northwest of production at LaBarge, Sublette County. It is down 1275 feet and showing some oil.

A new commercial producing horizon for the West Mule Creek field, 25 miles northeast of Lance Creek, has been proved by the Fall River Royalty & Producers' Government 1, CSL SE SE 35-40n-61w, which pumped 60 barrels initial from the Bell sand of the Minnelusa formations into which it had drilled to 2675 feet. This is the second well to be drilled to the Pennsylvanian beds in the field but is the first conclusive test made of the producing capabilities of the formation. The discovery is considered of particular importance in view of the possible further development work which may be undertaken to this lower member of the Minnelusa sands in the Lance Creek field. The Converse, Leo and Joss sands of the series have proven commercial at Lance Creek and some oil has been encountered in the Bell sand at this field but to date no systematic test of the lower horizon has been made in the larger field.

On the Camp Crook structure, in Harding County, western South Dakota, State Royalty Petroleum Company's State 1, SW NE 35-18n-1e, is plugging back for a test of several oil and gas shows encountered on the way down to 7521 feet. Carter Oil Company and other major interests have acquired leases in this region.

Michigan

Walker field extended half mile into Ottawa

Mt. Pleasant, Mich.—Twin Drilling Company appeared to have extended the Walker field, when McKay 1, SW NW NW 25-7n-13w, Tallmadge Township, Ottawa County, started off at an estimated 130 barrels per day from Traverse lime at 1895 feet. Test is a full half mile north of previously developed production.

Silver Creek Oil Company's Flynn 1, Section 23-5s-16w, Cass County, completed for a 12-barrel pumper after acid. However, operators have been unable to get a 100 percent shut off with a plug back from 827 to 823 feet and water continues to cut production. The wildcat is the shallowest producer in Michigan.

Of six other wildcats completed during the week, all were shallow tests in Southwestern Michigan with the Traverse the objective.

J. V. Wicklund Development Company's State A1, Section 11-18n-1w, Buckeye Township, Gladwin County, was drilling in dolomitic limestone and shale streaks at 4310 feet December 12 with the Sylvania sand objective due to be logged this week. It marks the first Sylvania test in the Buckeye field, where the only commercial zone developed is Dundee at 3600 feet.

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Forest City Basin

Nebraska discovery well fails to pump the bonus

St. Joseph, Mo.—Clogged with paraffin, the pump of Pawnee Royalty Company's Boice 1, first Nebraska producer, fell short of 50 barrels on December 8 and was not operated at all on December 9, with the result that 19 days of the official state test went for naught. The first attempt to win the $15,000 bonus had failed.

In 19 days the well had produced 1126 barrels, the pump having been operated in short daylight shifts. The state had offered $15,000 for the first well to produce a minimum of 50 barrels for 60 days. Owners of the well interpret the offer to mean consecutive days; hence the test must start over.

Boice 1 is a Hunton lime producer that has not been acidized. Hunton was topped at 2276 feet and the well drilled to 2287 feet. The pay zone began at 2279 feet.

The oil has been analyzed as follows: Mixed base, mainly paraffinic in lighter fractions and asphaltic in heavier fractions; low gasoline content, low volatility and octane zero.

By blending with natural gasoline to a satisfactory volatility and vapor pressure, it would not give even a satisfactory third-grade gasoline.

A considerable amount of hydrogen-sulphide and some sulphur dioxide was given off during distillation. The gasoline and kerosene are very sour when tested. Gravity of the oil is 30.1 and kerosene content is 14.9 percent; gas oil content is 25.5 percent; sulphur content is 0.41 percent; color is dark brown.

The oil has been selling for 94 cents a barrel.

Pawnee Royalty Company is drilling its second well 1½ miles southwest of the producer, and keeping a tight hole as they did with their first one. Fifteen miles west in the same county another wildcat is going down.

Deepest well in the Missouri sector of the Forest City basin is F. C. Miller's Corrough 1, east of St. Joseph in Buchanan County. It topped Mississippi lime at 1201 feet and went out of it at 1512 feet. At this time it is underreaming 10-inch casing, preparatory to exploring Hunton lime.

Phillips Petroleum Company is drilling at Creston, Iowa, in Union County, the southwest part of the state. Most interesting news in Iowa, however, is the statement of Iowa's attitude toward sale of leases. The state regards leases as securities and holds that all must be registered before being offered for sale in the state. It holds that leases on Iowa land can not be sold in Iowa until it is proved that oil exists in the state.

In the Kansas sector of the Forest City basin the hottest spot is Jefferson County, near the town of McLouth. Ed Mosbacher, Huntsman Haworth and C. B. Taylor's McLaughlin 1 is drilling below 1750 feet after sealing 8,000,000 cubic feet of wet gas found at 1455 feet in Bartlesville sand. An offer of 8 cents per thousand feet for the gas was refused. A lease play is under way in the county as a result of the well.

UNITED STATES WELL COMPLETIONS

Summary of Wells Completed in the United States Week Ending December 16, 1939

	Completions	Oil Wells	Gas Wells	Failures	Initial Production	Total 1939	Total this Date 1938
Alabama	....	....	....	....	.....	2	2
Arizona	....	....	....	....	.....	1	....
Arkansas	5	3	....	2	220	222	229
California	13	11	1	1	11,927	1,053	1,233
Colorado	....	....	....	....	.....	19	10
Florida	....	....	....	....	.....	....	....
Georgia	....	....	....	....	.....	1	1
Illinois	56	39	....	17	8,769	3,736	1,924
Indiana	9	3	2	4	250	288	164
Kansas	20	18	....	2	23,278	1,409	1,623
Kentucky	17	7	2	8	213	644	790
Louisiana	43	23	4	16	5,216	1,148	1,055
Michigan	30	20	....	10	2,339	1,450	976
Mississippi	2	1	....	1	500	18	20
Montana	4	4	....	....	210	152	75
Nebraska	....	....	....	....	.....	1	1
New Mexico	21	18	....	3	8,327	652	528
New York	*23	*23	....	....	171	*647	*662
North Dakota	....	....	....	....	.....	....	1
Ohio	35	6	16	13	105	993	917
Oklahoma	45	24	1	20	7,252	2,030	2,048
Pennsylvania	*39	*37	2	....	41	*1,514	*2,021
South Dakota	....	....	....	....	.....	....	....
Tennessee	....	....	....	....	.....	4	2
Texas	207	147	6	54	79,886	9,288	12,001
Utah	....	....	....	....	.....	....	4
West Virginia	19	3	12	4	23	575	680
Wyoming	3	2	1	....	636	149	106
Total this week	591	389	47	155	149,363	25,984	26,972
Total last week	604	443	51	110	178,327	25,403	26,454
Total this year	25,984	17,792	1,890	6,302	* Includes water input wells.		

Arkansas

Company, Well and Location	Init. Prod. Bbls.	Depth
Columbia County (Atlanta)—		
Tidewater Associated, Clarke 1, 16-18-19	135	8256
Columbia County (Magnolia)—		
G. H. Vaughn, Jameson 1, 15-17-20	*	7824
Nevada County (Troy)—		
Benedum & Trees, Jackson 3, 9-14-20	45	2124
Union County (Urbana)—		
E. C. Johnston, Axum 1, 31-17-13	*	3000
Delta Drilling Co., Bull 1, 6-18-13	40	2730

California

Company, Well and Location	Init. Prod. Bbls.	Depth
Los Angeles County (West Montebello)—		
Dutch Pet. Co., Schelnik 1	750	7666
Fullerton Oil Co., Scott-Arnold 3	700	7610
Montebello, Wallace-Nordon 1	536	7666
Los Angeles County (Wilmington)—		
Long Beach Dev. Co., "W" (LB) 7	550	4034
Royalty Service, Lakme 1	400	3623
Kern County (Greeley)—		
Standard, Ross 1	300	11,524
Kings County (Kettleman No. Dome)—		
K.N.D.A., No. 38-22Q	2513	7925
Standard, No. 32-27Q	2100	7800
Kern County (Midway Sunset)—		
Texas Co., No. 36	200	3220
Kern County (Strand)—		
Tide Water Associated, Strand-KCL E-5-7	2040	8330
Ventura County (Ventura Avenue)—		
Shell, Taylor 108	1838	8552
Sacramento County (Rio Vista)—		
Texas Co., Welch 1	¶18	4300
Kern County (Mountain View)—		
Hogan Pet. Co., Wible 1	*	6619

Illinois

Company, Well and Location	Init. Prod. Bbls.	Depth
Brown County—		
J. W. Fairbairn, Newton 1, sw sw se 33-2s-4w	*	415
Clark County—		
W. R. Miller, Booth 1, se ne nw 17-11n-14w	80	2462
Clinton County—		
Cascade Oil Co., Adams 1, se se ne 13-3n-1w	250	1447
Coles County—		
Daugherty & Dunn, Mitchell 1, se ne sw 24-11n-10e	*	650
Cumberland County—		
National Consumers, Ward 1, ne se ne 17-9n-9e	*	2152
Edwards County—		
Magnolia, Etheridge 2, se sw sw 18-3s-14w	76	3144
Thorpe, Broster 1, c nw se nw 33-1s-14w	*	3098
Noah-Morrison, Brown 1, nw ne nw 15-3s-10e	*	3374
Fayette County—		
Union Products Pet. Co., Arnold 7, se nw sw 8-7n-3e	180	1590
Jarvis Bros., Sinclair 14, sw ne nw 29-8n-3e	250	1525
Sinclair 15, nw ne nw 29-8n-3e	130	1528
Sinclair 16, nw ne nw 29-8n-3e	150	1537
Carter, Tucker 3, nw ne se 32-8n-3e	720	1580
Watson 6, sw se sw 33-8n-3e	292	1572
Hamilton County—		
Alma O&G Co., Davis 1, se sw se 9-7s-6e	*	3389
Jefferson County—		
S. W. McGee, Halloway 1, nw nw se 10-1s-1e	*	2113
Marion County—		
Texas Co., Heyduck 9, nw sw se 4-1n-2e	196	1882
Heyduck 10, se se sw 4-1n-2e	140	1877
Lankford 4, ne nw ne 4-1n-2e	136	1872
Johnson 22, sw sw sw 5-1n-2e	1400	1834
Lankford 5, nw nw nw 9-1n-2e	175	2075
Kingwood Oil Co., Devore 7, ne nw nw 17-1n-2e	20	1927
Big Four O&G Co., Dean 1, se se sw 4-2n-1e	75	2991
Menhaul et al, Robinson 2, nw se sw 4-2n-1e	240	2984
Shell, Lutz 1, nw nw se 18-3n-1e	107	1439
Booth & Absher, Branch 1, se se sw 33-3n-2e	75	2165
McMakin 1B, sw sw sw 34-3n-2e	340	1946
Roy Brown et al, Verner 1, se ne sw 33-3n-2e	*	2186
Mrs. L. King, Kagy 4, sw sw se 33-3n-2e	960	2149
St. Clair County—		
Demos, Schellhardt 2, lot 32, 1n-10w	*	590
Shelby County—		
J. Boeseke, Jr. et al, Bigler 1, nw ne nw 12-9n-6e	*	2411
Wabash County—		
F. D. Walker, Fitzgerrel 1, ne se sw 9-2s-13w	85	2456
A. L. Willis, Lovellette 1, ne se sw 9-2s-13w	55	2464
P. T. Word, Howell 1, sw se sw 9-2s-13w	82	2461
R. E. Wilson Drl. Co., Kingread 1, se ne sw 9-2s-13w	150	2455
Younts, Epler 1, se ne sw 9-2s-13w	35	2450
Grace 1, se ne sw 9-2s-13w	175	2448
Dee Bros. et al, LeGier 1, sw se sw 10-2s-13w	*	2495
Centralia Ref. Co., Koe et al 1, ne ne ne nw 16-2s-13w	109	2457
Koe 2, ne ne nw 16-2s-13w	72	1844
Tidewater Associated, LeGier 2, nw sw nw 16-2s-13w	175	2416
Elkins 3, ne se se 30-2s-13w	147	2469
Delta Drl. Co., McKendree 1, nw ne ne 6-3s-13w	*	2887
Marvel Oil Co., Beall 1, c ne nw sw 11-2s-13w	287	2714
Redwine et al, Shultz 1, nw se ne 36-2s-14w	*	2180
Washington County—		
Shell, Sharkowski 7, nw ne nw 23-3s-3w	127	1289
Dix 1, c nw ne ne 19-3s-1w	46	1370
Kingwood, Brink 1, c se sw se 15-1s-1w	*	3362
Wayne County —		
Southern Pet. Corp., Walker 2c, ne sw nw 16-3s-9e	160	3400
Texas, Boggs 2, c e ne ne 35-2s-8e	52	3356
Robinson et al, Hornick & Murphy 9B, c ne sw sw 35-2s-8e	325	3398
R. O. Harding, Simpson 1, n ne se 10-1n-6e	*	3312
White County—		
Penn.-Illinois Oil Co., Porter 1, e ne se 12-6s-8e	410	3130
Kingwood, Siegfried 1, nw se sw 30-3s-11e	*	3558
Phillips, Garner 1, sw ne ne ne 36-4s-10e	285	2961
Williamson County—		
J. H. Williams et al, Smothers 1, ne se ne 9-9s-2e	*	2500

Indiana

Company, Well and Location	Init. Prod. Bbls.	Depth
Gibson County—		
Hollandsworth, Keck 1, se ne nw 34-3s-14w	75	2954
Pike County—		
Walker et al, Colvin 1, nw ne 30-1n-6w	¶.23	758
Allen et al, Electric Shovel Coal Co. 1, sw se se 18-2s-7w	*	1566
Posey County—		
Superior Oil Co., New Harmony 14, se sw sw 10-5s-14w	100	2213
Sun, Grebe 1, nw ne sw 1-7s-12w	75	1884
Spencer County—		
Kentucky Nat. Gas Co., Axton-Bumpass 1, c s½ sw ne 30-7s-6w	¶11.00	881
J. S. Albertson, Ray 1, nw sw se 11-6s-4w	*	630
Kelly et al, Schnell 1, nw sw sw 9 6s-4w	*	1070
Vigo County—		
Ben H. Nation, Boyce 1, se se sw 33-11n-9w	*	2195

Kansas

Company, Well and Location	Init. Prod. Bbls.	Depth
Barton—		
B. B. & M. Drlg. Co. et al's Krier 1, c e½ se se 30-16-11w	446	3327
Stanolind, Shartz 13, cwl sw ne nw 2-20-11w	638	3291
Shell, Schlessinger "A" 1, se ne se 13-20-12w	147	3312
Cowley—		
Brewer et al, Brown 1, sec nw 33-30-4e	763	3291
McKnabb et al, Hittle 3, 50 ft e nwc ne 21-31-4e	1918	3364
Shawver et al, Henderson 1, c w½ ne ne 4-33-6e	*	3604
Ellis—		
Lario, Cress "C" 3, ne sw sw 13-11-17w	3000	3357
Dickey, Kollman 1, c n½ sw ne 18-11-17w	3000	3363
McPherson—		
Continental et al, Goering 11, nwc sw 29-21-1w	353	3300
Rice—		
Shell et al, Sherman "B" 4, nec 16-19-9w	2924	3241
Skelly, Smith 2, c s½ sw ne 28-19-10w	300	3311
Schneider, Renollett 1, nec se 36-20-8w	1459	3317
Rooks—		
Bay, Hahn 1, swc se 31-10-17w	145	3623
Russell—		
Spencer et al, Atherton 2, c s½ ne ne 30-13-14w	959	3300
Texon, Letsch 11, 165 ft s se ne sw 26-14-13w	1818	2872
Aylward, Solback 2, nw se ne 31-14-14w	1762	3040
Skelly, Anderson 1, c s½ sw nw 8-15-13w	1110	3160
Shell, Sellens 1, swc 33-15-13w	1639	3330
Sedgwick—		
Ace, Warren 2, sw ne ne 21-25-1e	*	3415
Stafford—		
Stanolind, McComb 5, c s½ sw nw 12-24-11w	897	3744

*Failures; †Junked; ¶Million cu. ft. gas.

United States Well Completions

Kentucky

Company, Well and Location	Init. Prod. Bbls.	Depth
Butler County—		
Phillips, Hawes 4	10	547
South Penn, McPherson 2	*	473
Daviess County—		
Wanna Oil Co., L. & N. 1	150	1230
Daugherty, Howard 5	25	1222
P. Evans, Ewing 1	*	1887
Basin Drl. Co. et al, Howard 1	*	1047
Baldwin Oil Co., Westerfield 3	*	1781
Floyd County—		
Kentucky-W. Va. Gas Co., McKinney 5268	¶2.71	2115
Hancock County—		
Chancellor, Bivens 1	*	1296
White & Vickers, Newton 1	*	367
D. Ramsey, Compton 1	*	565
Ohio County—		
Ohio Oil Co., Kelly 16	10	620
Dehart & Lykens, Bartlett	5	442
Frazier & Lilly, Davis 1	*	1465
Powell County—		
Evans Oil & Gas Co., Crude 1	8	840
M. C. Irwin, Rogers 2	5	800
Todd County—		
Eubank et al, Scott 1	¶.50	1481

North Louisiana

Company, Well and Location	Init. Prod. Bbls.	Depth
Bossier Parish (Bellevue)—		
J. B. Stovall, Gayoso Co. 4, 14-19n-11w	15	387
Caddo Parish (Rodessa)—		
M. M. Travis et al, Chandler 1, 5-23n-15w	625	6154
Caddo Parish (Pine Island)—		
McElmury & Hamilton, Mattson 1, 1-20n-16w	40	1550
Stanolind, Dorian 1, 18-21n-15w	200	1725
H. H. Huckabay Est. 5, 11-21n-15w	12	1695
P. N. McCullough, Hart 4, 21-21n-16w	*	1040
Texas Co., Atkins Fee 1, 7-20n-15w	15	1571
Guy & Richardson 1, 1-20n-16w	35	1456
Caddo Parish (Vivian-Pine Island)—		
Burnham Drlg. Co., Wilkinson 2, 33-22n-16w	95	2495
Graham & Lawton, C. J. Lawton Est. 1, 24-22n-16w	*	2850
Weaver Oil Corp., Thornton 1, 24-22n-16w	*	2810
Sabine Parish (Zwolle)—		
Major Oil Co., Bowman-Hicks 8, 7-7n-12w	15	2525
A. R. Chestnut, Sepulvado 1, 4-7n-12w	*	2458
J. E. Stack, Gray 1, 3-7n-13w	*	2475
Hunter Co., Sabine Lbr. B-2, 3-7n-13w	*	2612
Union Parish (Monroe)—		
Southern Carbon Co., Grayling 34, 19-22n-4e	¶3	2200
Memphis Nat. Gas Co., Frost B-2, 15-22n-3e	¶1	2205
H. L. Woods, Tr., Union Power Co. 1, 29-21n-3e	¶3	2210
Webster Parish (Cotton Valley)—		
Quad Oil Co., Bodcaw 2, 15-21n-10w	*	5928

South Louisiana

Company, Well and Location	Init. Prod. Bbls.	Depth
Abbeville—		
Stanolind, LeBouef 1	*	7768
Baton Rouge—		
W. V. Bowles, University Hills 2	115	6516
Chalkley—		
Humble, Hanszen 5	408	8651
Charenton—		
DeArmand, Kern 5	469	1138
Kern 8	486	1167
Boudreaux 5	*	1365
Simoneaux 7	372	1159
Simoneaux 8	64	1161
Knisley Oil Co., Hertel 9	*	2820
Pan American, Lawes 17	¶1	7208
Robichaux 13	100	1125
Robichaux 14	20	1245
Fausse Point—		
Texas Co., State 3	100	4993
Golden Meadows—		
Texas Co., State Catfish Lake 3	*	3509
Falgout 8	*	3179
Grand Lake—		
Amerada, State 2	25	8350
Horseshoe Bayou—		
Texas Co., State 3	*	12,030
North Crowley—		
Humble, Davis 2	70	8204
North Elton—		
Stanolind, Jenkins 1	25	7430
Paradis—		
Texas Co., LLE Paradis 2	1710	10,340
Ville Platte—		
Continental, M. Haas 4	260	9050
West Gueydan—		
Magnolia, A. M. Swan 1	*	7345
St. Martin Parish—		
Wm. Helis, Levert-St. John 2, Section 28	*	8157
Vermilion Parish—		
Louisiana Land, Louisiana Furs 3, White Lake area, 9-15s-1e	*	8900

Michigan

Company, Well and Location	Init. Prod. Bbls.	Depth
Allegan County—		
Bell-Marks, Inc., Hendrixson 1, sw sw ne 23-3n-12w	20	1637
Socony Vacuum, Schad 1, se se se 21-4n-11w	*	1990
Lentz & Millers, Beren 2, sw sw se 27-4n-14w	125	1539
Jacob Bolema, Poppen 2, sw nw se 27-4n-14w	130	1493
Charles Cook, Hazekamp 1, ne nw nw 34-4n-14w	*	1618
Gulf, Zerfas 3, sw se ne 15-4n-13w	15	1591
Salem Gas Co., Smith 5, se nw nw 23-4n-13w	180	1589
A. S. Cochran, Kent 1, sw sw sw 2-2n-12w	*	1845
Seaboard Oil Co., Dolezal 1, nw se nw 13-3n-11w	*	2010
Cass County—		
Silver Creek Oil Co., Flynn 1, nw sw nw 23-5s-16w	12	823
Isabella County—		
Gulf, Reed 1, sw nw nw 16-16n-3w	85	3710
Cities Service, Tice 1, se ne ne 29-16n-3w	182	3698
Kent County—		
Fisher-McCall, Newhouse 3, nw se nw 29-7n-12w	600	1876
D. F. Jones, Gammage 1, n½ se nw 31-7n-12w	60	1869
W. L. Harvey, Burgess 1, ne ne ne 32-7n-12w	75	1930
Bob Voorhee, Burgess 1, ne se nw 32-7n-12w	150	1900
Smith Pet. Co., Engelsma A2, ne nw nw 32-7n-12w	75	1896
Cudahy 4, sw ne nw 33-7n-12w	65	1886
Cudahy 6, se ne nw 33-7n-12w	115	1946
Eastern Pet. Co., Cudahy 2, ne se nw 33-7n-12w	190	1887
James Flanigan, Martin 1, nw sw nw 35-7n-12w	*	2015
Monroe County—		
Harsin & David, Bragg 1, c e sw nw 30-6s-6e	15	2131
Montcalm County—		
American Prod., Rider 1, nw se se 26-12n-6w	*	1300
Ottawa County—		
Weller & Dapars, Vos 1, ne se ne 33-7n-14w	*	1821
G. W. Norton, Bjork 2, se ne sw 25-7n-13w	70	1874
Twin Drilling Co., McKay 1, sw nw nw 25-7n-13w	130	1895
N. R. Dodd, DeKorne 1, ne nw ne 36-7n-13w	*	1905
Wolverine Gas Corp., Goodale 1, ne ne ne 36-7n-13w	45	1875
Van Buren County—		
Shelbow Oil Co., Drake 2, se sw nw 28-2s-16w	*	1012
Clapsaddle & Harris, Schiles 1, ne ne nw 27-1s-15w	*	1153

Mississippi

Company, Well and Location	Init. Prod. Bbls.	Depth
Wilkinson County (Wildcat)—		
Louisiana Progress Oil, Young 1, 40-4n-1e	*	5750
Yazoo County (Tinsley Dome)—		
Jones & O'Brien, Stevens B-1, 12-10n-3w	500	4895

Montana

Company, Well and Location	Init. Prod. Bbls.	Depth
Glacier County (Cut Bank Field)—		
Texas Co., Bilstead 1, cnw se 4-36n-5w	20	2838
Mose Wagner, Tribal 2-X, nw ne se 12-32n-6w	50	2961
Toole County (Kevin-Sunburst Field)—		
Kippen Oil & Gas Co., Solberg 1, sw se ne 20-35n-3w	25	1904
Nepstead, Montgomery & Fargher, Haugen XX2-A, se se sw 2-35n-3w	115	1853

New Mexico

Company, Well and Location	Init. Prod. Bbls.	Depth
Chaves County—(Wildcat)—		
Meither et al, Smith 1, nw se se 30-11s-25e	*	840
Eddy County—		
Allen-Fair & Pope, State 3-A, se nw se 36-17s-29e	80	2730
Cone et al, Langford 2, se ne sw 9-18s-29e	1480	2498
Repollo, Parks 7-A, se sw se 15-17s-30e	151	3444
Lea County (Eunice)—		
Drl. & Explo. Co., State-Repollo 2-F, c nw sw 19-21-36	165	3950
Ohio, State-McDonald 12, ne nw ne 13-22s-36e	1200	3760
Texas Co., State 7-C, c sw ne 19-20s-37e	84	3866
Repollo, State 7-D-157, sec sw 12-22s-36e	912	3761
Lea County (Halfway)—		
Continental et al, Langston 1-A-15, c sw sw 15-20s-32e	*	2902
Westlea Oil Co., Moore-Texaco 1, c n½ nw ne 21-20s-32e	*	2385
Lea County (Hardy)—		
Gulf, Owens 1, c nw se 34-21s-37e	75	3735
Lea County (Langlie)—		
Anderson-Prichard, Stuart 4, c w½ ne nw 11-25s-37e	216	3447
Wells-Conoco 11, c n½ sw ne 4-25-37	528	3518
Lea County (Lovington)—		
Amerada, State 5-L-A, c se ne 1-17s-36e	562	4950
Lea County (Maljamar)—		
Cockburn et al, Baish 4-B, c sw ne 27-17s-32e	372	3885
Lea County (Mattix)—		
Skelly, State 3-M, c ne sw 32-34s-37e	760	3550
Stanolind, Myers 2-A, sw se se 22-24s-37e	312	3570
Lea County (Penrose)—		
Clower et al, Christmas-Gulf 4-B, se nw sw 28-22s-37e	76	3678
Gulf, Brunson 1, c nw ne 10-22s-37e	90	3705
Lea County (Vacuum)—		
Drl. & Explo. Co., State-Shell 3-O, c n½ ne ne 34-17s-34e	100	4630
Humble, State 11-K, c nw se 28-17s-35e	1164	4640

New York

Company, Well and Location	Init. Prod. Bbls.	Depth
Allegany County—		
Vosburg Oil Co., Green farm, Bolivar	6	1286
Ebenezer Oil Co., Herrick farm, Alma	7	1320
Liberty Share Corp., Lee farm, Bolivar	7	1424
Irving T. Clancy, Norton & McEwen lease, Bliven farm, Scio	*	4406
Trio Oil Co., Lot 8, Bolivar	10	1370
Forest Oil Co., Ackerman farm, Bolivar	25	1429
R. B. Moore, Wetherby farm, Bolivar	9	1476
Conklin & Reeland, Swarthout farm, Bolivar	15	1423
J. A. Wilber, Northrup lot, Bolivar	5	1416
Putnam Oil Co., Fay farm, Wirt	7	1462
Forest Oil Co., Ackerman farm, Bolivar	20	1420
Ackerman farm, Bolivar	20	1432
Ackerman farm, Bolivar	20	1412
Ackerman farm, Bolivar	20	1426
Water (Intake) Wells—		
R. B. Moore et al, Curtiss farm, Bolivar	..	1316
Curtiss farm, Bolivar	..	1294
Forest Oil Co., Ackerman farm, Bolivar	..	1380
Messer Oil Corp., Wilson-Reynolds farm, Bolivar	..	1327
Forest Oil Co., Ackerman farm, Bolivar	..	1460
Ackerman farm, Bolivar	..	1442
Dawson Oil Co., Norton farm, Scio	..	1270
Triangle Oil Co., Hickson farm, Alma	..	1486
Helen Randall, Reid-Pike farm, Alma	..	1436

Oklahoma

Company, Well and Location	Init. Prod. Bbls.	Depth
Caddo—		
Carry et al, Moore 1, sw se ne sw 3-5n-9w	507	3416
Carter—		
Shell, Tubbi 43, ne sw nw 24-4s-3w	¶0.24	1449
Comanche—		
Johnson, Johnson 2, se se ne sw 26-2n-11w	2	252
Cotton—		
Shasta, Littlefield 2, nw ne se nw 31-1s-9w	*	2302
Creek—		
Chapman et al, McMack 1, ne sw se 35-15n-10e	176	2145
Garrett's Iles 1-A, nw se ne 1-19n-9e	*	2078

*Failures; †Junked; ¶Million cu. ft. gas.

United States Well Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Grady—		
McCasland, Slusher 1, ne nec se 28-3n-5w (otd 2420 ft)	*	2204
Jackson—		
Harris, Cook 1, nwc ne 2-1n-20w	*	1753
Gulf, McDaniels 3, ne se ne 3-1n-20w	36	1592
Fowler 1, sw ne sw 9-1n-20w	7	1748
Barnett 2, nw ne sw 10-1n-20w	25	1661
Harris et al, Cole 1, swc 35-2n-20w	*	1285
Burnham, Sumner 5, sw ne se 6-1s-19w	110	2571
Jefferson—		
Lesh et al, Trout 2, nw se sw nw 17-7s-5w	10	836
LeFlore—		
LeFlore Gas & Electric Co., Hickman 2, c s½ s½ 8-8n-25e	*	2340
Marshall—		
McLaughlin, Little 2, 50 ft w swc nw 30-7s-7e	*	381
Okmulgee—		
Jordan's Jordan 2, se nwc 12-14n-12e	*	1565
Bott, Jefferson 1-A, se nwc 7-14n-13e	*	2125
Armstrong, Rentie 6, ne ne sw nw 3-14n-14e	8	1645
Wallace, Colbert 13, nw swc ne 14-14n-14e	5	1074
Osage—		
McBride, 36, nw sw ne ne 18-23n-12e	*	1734
Bowers, 6, 180 ft n ne nw se 24-24n-7e	*	760
Pawnee—		
Platter, Bunch 3, ne nw sw sw 4-20n-9e (otd 680 ft)	*	2760
Fortner, Pierce 4, sw nw sw se 20-20n-10e	2	1879
Payne—		
Texas, Longan 4, c e½ ne nw 12-17n-1e	998	4845
Pontotoc—		
Senora, Tucker 1, sw ne ne 35-5n-4e	65	2453
H and M et al, Harrell 5, 200 ft e c n½ se 29-5n-8e	25	850
Pottawatomie—		
Atlantic, Spaugy 3, se sw nw 6-6n-4e	216	4483
Newstadt, Howeth 1, ne se ne 14-6n-4e	*	5387
Shaffer, Groves 1, nec 5-6n-5e (otd 4338 ft)	65	3390
Patterson, Mann 1, sw ne sw 19-6n-5e (pb 2872 ft)	801	2899
Phillips, Bettis 3, sw se sw 21-7n-4e	1150	4320
Krumme, Coley 1, nw se se 24-7n-4e (otd 4145 ft)	2	4210
Sinclair Prairie, Deatherage 5, nw ne nw 28-7n-4e (otd 4146 ft)	2416	4309
I. T. I. O. Co., Weems 4, sec sw 21-7n-5e	22	2772
Smith, Brandenberg "C" 1, swc se 34-8n-4e (otd 4167 ft)	*	4278
Yorkan, Williams 1, nw sw nw 4-10n-4e	*	4570
Seminole—		
Smith, Lowery 1, nwc sw 10-6n-5e	*	4589
Summers, Caesar 1-A, swc 21-6n-6e	67	3600
Mid-Continent et al, Factor 1, swc 15-7n-5e	*	2785
Stephens—		
Pace, Montgomery "A" 2, ne sw se 11-2s-8w	*	2191
Tillman—		
I. T. I. O. Co., Fillmore 1, swc se 36-2s-19w (otd 5145 ft)	532	5165
Tulsa—		
Barham, Cline 1, sw ne se 1-18n-12e	5	1480
Pratt, Sand Spring Home 1, nw nw se sw 26-19n-11e	*	860
Wagoner—		
Sewell et al, Williams 2, 200 ft e cwl ne ne 22-17n-16e	*	843

Ohio

Company, Well and Location	Init. Prod. Bbls.	Depth
Athens County—		
Ohio Fuel Gas Co., Pinkerton 2	¶.16	1582
A. D. Townsend, M. Weatherby 3	¶.10	1707
Gibson et al, Starlin 1	*	1590
Coshocton County—		
Pure, Ashcraft 3	90	3171
Willy et al, Willy 1	15	3143
Gallia County—		
Ohio Fuel Gas Co., Shaver 1	¶.05	1544
Guernsey County—		
Purly Gas Co., Hays 1	¶.45	895
E. W. Lalladay, J. E. Melghen 1	*	1212
Knox County—		
C. A. Davis et al, Clutter 1	¶.08	2583
Brown et al, Burras 3	¶.05	2175
Ohio Fuel Gas Co., Lepley 1	*	3011
Licking County—		
Shrider & Davidson, Rice 2	¶.80	2625
Ohio Fuel Gas Co., Jones 2	¶.52	2330
Hollar 1	*	2680
Hazlett, Deering 2	*	2608
Peavy & Sons, Smith 3	*	625
Stricker et al, Miller 1	*	744
Medina County—		
Marine Tr. Fund Co., Packard 03	I	387
Ross 034	I	359
Ross 038	I	358
Ross 040	I	329
Meigs County—		
H. N. Nelson, Holt 2	¶.10	830
Morgan County—		
C. Foraker et al, Dearth 1	*	5193
Noble County—		
Yoker Valley O&G Co., Long 3	¶1.00	1605
H. Clymer, Bates Heirs 2	¶.24	1651
J. Skinner, Brown 2	*	1300
Perry County—		
Atha Oil Co., Barnett 1	*	3323
Stark County—		
East Ohio Gas Co., Royer 1	¶2.10	4668
Tuscarawas County—		
Brendel Prod. Co., Boltz 1	¶.16	1188
Washington County —		
Henning & Hall, Liebrand 1	¶.83	1429
Otto Heldman, Mossbury 2	¶.10	1140
Henning & Cullen, Cullen 3	¶.05	1052
Harlan et al, Kuddington 1	*	1811
C. P. Bowman, Smith 1	*	1769
Best Run Oil & Gas Co., Best 3	*	1163

"I" indicates water input well.

Pennsylvania

Company, Well and Location	Init. Prod. Bbls.	Depth
Bradford District (Water Intake Wells)—		
N. V. V. Franchot, Mgr., Trustee, Campbell, 1 well	..	....
Forest Oil Corporation, 2 wells	..	....
Forest Petroleum Corp., 2 wells	..	....
Niagara Oil Corp., 6 wells	..	....
Smith Newton Oil Co.	..	....
Bradford District—		
E. G. & F. W. Staphan, Kurtzhalts	2	....
B. E. L. Oil Co., fee	6	....
First Nat'l Bank, Pt. Allegany, fee	3	....
Forest Oil Corp., 2 wells	2	....
Forest Petroleum Corp.	1	....
Niagara Oil Corp., 2 wells	2	....
H. E. Camp Estate, Bing 263	5	....
Lloyd & Hardy, Meehan	4	....
T. H. Gavin, Bing 317-31-22-27	1	....
W. A. Bolles, Baum	1	....
Bradford Transit Co., 9 wells	9	....
Middle District—		
W. B. & F. E. Kapp, Addison Korg	¶	....
Bellis & Kline, Charles Lineman	1	....
G. L. Rhodes et al, Rhodes	1	....
Butler-Armstrong District—		
H. O. Hunter, Hunter Bros.	1½	....
Adam Lang et al, Augusta Holl	1	....
Harry Bupp et al, Harry Bupp	¶	....

Texas Gulf Coast

Company, Well and Location	Init. Prod. Bbls.	Depth
Anahuac—		
Humble, Middleton 41	640	7098
Tyrell 30	669	7080
Cedar Bayou—		
J. R. Turnbull, Kirby 2	*	6660
Cedar Point—		
Standard of Texas, State 55-119	*	6250
Clear Lake—		
Humble, Humble-West Fee C-21	370	5914
Clinton—		
Houston Oil Co., Springer 1	¶20	3223
Fairbanks—		
Amerada-Stanolind, Foley 13	120	6846
Foley 14	100	6850
H. B. Owenby, White 8	140	6852
Friendswood—		
Humble, West Prod. Co. 19	513	6040
Hardin—		
Pan-American, Richardson 1	279	7668
Hastings—		
Stanolind, McDonald 9	604	6080
Sneed 17	444	5685
Lovall Lake—		
Humble, Broussard Trust 16	185	7801
Markham—		
Red Bank, Howard Smith 1	35	1270
Martha—		
Stanolind, Seaberg 2	*	8164
Old Ocean—		
Harrison & Abercrombie, Berthelson 1	285	10,399
Orange—		
Ryan & Tillery, Granger 1	60	5776
Segno—		
Humble, Kirby B-X-18	405	8145
South Houston—		
Stanolind, Drilling District 15, No. 1	*	6495
South Liberty—		
Sadler Prod. Co., McLean 3-A	30	880
Thompson—		
Gulf, Wolters A-1	656	5410
Turtle Bay—		
Stanolind, Robertson-McDonald 1	*	6642
Brazoria County—		
Humble, Smith 1, Bonney area, W. D. C. Hall sur.	*	10,007

Texas Panhandle

Company, Well and Location	Init. Prod. Bbls.	Depth
Carson County—		
Magnolia, Fee (Tract 244) 66	475	3103
Texas Co., Boney-Magnolia 12	606	3100
Gray County—		
Evans et al, J. T. Benton 6	463	3296
King Oil Co., Chris Baer 5-B	343	3280
Magnolia, W. C. Archer 5	90	3298
Skelly, H. Schafer 101	312	3356
Hartley County—		
Phillips, W. K. Gordon 1	¶34.3	3975
Hutchinson County—		
Alma Oil Co., Whittenburg 7-D	20	2996
Concha O&G Co., Hodges 3	20	3071
Cree & Hoover, Halle 6	824	3055
Gulf and Panhandle, Dial 93	343	2982
Bob Murphy et al, Whittenburg 7	485	2750
Phillips, Maples-Lackey 1	¶13	3185
Texas Co., R. L. Pond 14	585	3080
Moore County—		
Phillips, Longmack 1	¶16.6	3200

West Central Texas

Company, Well and Location	Init. Prod. Bbls.	Depth
Brown County—		
McDonald-Campbell & W. Davis, Hill 2	132	1314
Callahan County—		
Gallagher & Lawson, Evans 1, sec 38	*	1770
Green & Owens, Anthony 6, sec 2	*	543
Henderson et al, Jackson 2, sec 20	*	914
Johnson et al, Harris 7, sec 39	*	460
Kleiner et al, Clark 1-C	*	854
Lanning et al, Burnham 2	40	1661
Callahan County (Wildcat)—		
Gallagher-Lawson & Callihan, Thornton 1	*	2225
Comanche County—		
Gallagher & Lawson, Ray 1, sec 12	*	606
St. John & Choate, Robertson 4, sec 2	15	648
Robertson 5, sec 1	7	646
Eastland County—		
W. J. Dobbs Oil Co. et al, Pierce 1	*	2702
Lone Star Gas Co., Kimmel 1, sec 87	53	3641
Palo Pinto County—		
T. P. Coal & Oil Co., Fee 6	¶3.1	3042
Shackelford County—		
Algord Oil Co., Swenson 6	577	3195
Clark et al, Vickery 1, sec 212	*	1659
Danciger, McCown 8	1650	3199
Fain-McGaha, Morris 2, sec 197	218	1520
Georgian Oil Corp., Balch 8, sec 509	15	584
Grossenbacher et al, Hickman 3-16	10	655
Iron Mt. Oil Co. et al, Coker 2, sec 159	233	3230
Lee & Key, Lee 8, sec 27 (key well)	*	1208
Owens-Snebold Oil Corp. et al, J. S. McKeever 7	1060	3196
Shackelford County (Wildcat)—		
Young et al, Newell 1, sec 8	*	1660
Stephens County—		
Wittmer O&G Prop., Inc. et al, Loving 2, sec 11	¶6	2263

South Texas

CORPUS CHRISTI DISTRICT

Company, Well and Location	Init. Prod. Bbls.	Depth
Bee County—		
Coronado Corp., Heard 1 (WC), Michael & Tool sur, in Heard area	¶20 & 20	5522
Calhoun County—		
Humble, P. H. Welder 23-B (Heyser)	625	5593
Jackson County—		
W. Stewart Boyle, Smith 1 (WC), Morris & Cummings sur No. 19 in Mauritz area	*	6010
British American, Broughton 2 (Francitas)	350	7480
Lonnie Glasscock, Drummond 10 (Vanderbilt-West)	700	5779
Hutchins et al, W. E. Appelt 1 (WC), J. R. Wickham sur	*	3765
Magnolia, West 35-A (West Ranch)	950	5131
Yaussi 1 (WC), Peter White sur	*	2665
Jim Wells County—		
Tom Graham Oil Co., Bankers Mortgage Co. G-2 (Alice)	450	5366
H. H. Howell, G. R. Muzzy 2 (Ben Bolt)	750	5308
Magnolia, Hornsby 1 (La Gloria)	¶10 & 75	7209
H. J. Mosser, Perales 4 (Ben Bolt)	420	5274
Texas Gulf Prod. Co., Miller 9-A (Reynolds)	500	5179
Kleberg County—		
Humble, Andrews 1 (WC)	*	6000
Live Oak County—		
Amory Oil Corp., Moczygemba 1, (WC) S. M. Williams sur No. 113	*	1300
Simmons Oil Co., McGriff B-11 (Oakville)	162	1838

United States Well Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Nueces County—		
Reed & Cox, Parr 1 (Minnie Bock)	135	3820
Union Prod. Co., Gee 3 (Agua Dulce)	¶43	5060
Wellington & Seaboard, Martin 1 (WC), South Clara Driscoll area, George H. Pauls subd, sec 130...	750	6701
San Patricio County—		
Bay-Tex Oil Co., Lish-Cralle 1, (McCampbell)	350	7650
O. W. Killam, Taft Synd 2, (East White Point)	450	5606
Texas Atlas Pet. Corp., Brown 1, (McCampbell)	450	7348
R. A. Welch, Fee 6 (East White Point)	700	5678
Victoria County—		
Renwar Oil Corp., Stoner 1 (WC) Diego Garcia sur.	*	6015
LAREDO DISTRICT		
Duval County—		
Continental, Driscoll A-42 (Driscoll)	76	3364
Cuellar Bro. Oil Co., Fee B-4 (Hoffman)	40	2796
J. Gravis, Vaello 1, (WC) R. Fletcher sur. No. 7	*	6023
Hiawatha O. & G. Co., Southland 20, (North Sweden)	102	5518
Southland 21 (North Sweden)	120	5533
Sun, Brueggemann 21, (Fitzsimmons)	720	4315
Texas Co., Duval Ranch Co., 35 (190) (Cedro Hill)	50	1453
Jim Hogg County—		
Humble, Mestena 2, (WC) Palo Blanca gr.	*	6495
Colorado Octane Co., Trevino 2 (Colorado)	650	3038
Starr County—		
Clopton & Clopton, Green & Manning 1, (WC) por. 81	*	377
W. R. Davis & Co., Slick 4-B (Rincon)	¶3 & 22	4612
Slick 5-B (Rincon)	*	4850
Sun, Speer 4, (Sun)	125	5010
Transwestern Oil Co., Cameron 1-B (Rincon)	*	*
Webb County—		
Boysen & Jones, Watkins 5-A (WC) 1, sec 1 ne por of county		* 721
Bridwell Employes Oil Co., Adami 2-A (Adami)	58	993
Magnolia, Volpe-Benavides 13, (Volpe)	80	2480
McClintock et al, Adami 1, (Adami)	62	990
Dan Purvis, Adami 2 (Adami)	86	1003
Red Bank Oil Co., Adami 5, (Adami)	40	1004
V. G. Schimmel, Benavides A-3 (Volpe)	59	2356
Zapata County—		
Buffalo Oil Corp., Hinnant C-21, (Mirando Valley)	82	1921
Interstate Minerals, Lopez C-7 (Mirando Valley)	60	1775
SAN ANTONIO DISTRICT		
Caldwell County—		
H. H. Coffield, Osteen 8 (Dale	5	2316
Guadalupe County—		
Pat Armstrong Soefje 1, (WC) D. Clements sur.	*	2679
Magnolia, Miller 10, (Darst Creek)	70	2647

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Company, Well and Location	Init. Prod. Bbls.	Depth
Medina County—		
Medina Prod. Wilson 3, (Ina)	10	940
Williamson County—		
Jackson et al, Bland 1 (WC) Parthinia Coursey sur.	*	598
Magnolia, Stiles (Thrall)	8	923
Pierce & Nash, Plaschke 1, (Byersville)	*	894
Taylor Ref. Co., Brymer 1, (WC) Simon Miller sur.	*	2035

North Texas

Archer County (Hull-Silk)—		
Blackwell O&G Co., Wilson-Christie 3-C	1896	4361
Blackwell & Helmerich-Payne, Wilson-McCrory 6	960	4360
Bert Ligon et al, Little 2-A	720	4380
Archer County—		
Barnes & Traugh, Carson 2-A, sec 1	150	1295
Eph Griffin et al, Waggoner Est. 4-B, sec 3	146	1645
Pace Pet. Co., Abercrombie 25-B, blk 156	15	1003
Shell, Colgan 3	86	1471
Colgan 4	*	1476
Archer County (Wildcats)—		
Burns et al, K. Pernartz 1, lot 19	*	4657
Perkins-Cullum, Falls County 183, blk 21	*	5065
Clay County—		
Harvey Drl. Co., Costley 1, sec 33	*	1074
Kolp et al, Magnolia 4, blk 47	*	285
Metzner et al, Taylor-Metzner 2, sec 23	396	1176
Tanner et al, Rigsby-Texaco 14	7	225
Cooke County—		
Bridwell Oil Co., Parkey 11	5	695
Horwitz & Oldom, R. W. Trew 10	*	1530
R. W. Trew 11	*	1655
King Oil Co., Wiesman 3	17	747
McDaniel & Beecherl, Wiesman 6	21	774
Denton County (Wildcat)—		
Kerlyn Oil Co., I. M. Hallmark 1	*	2090
Wichita County (K-M-A)—		
Consolidated Oil Co. et al, James 10	912	4002
C. P. Doss et al, Overby 3	442	4015
Granite Trust Co. No. 2, Martin 6	1200	3887
Hammon et al, McCarty 16-B	936	3920
Mitchell 3-C	1200	3889
J. G. Hammond, Strauss 2-B, blk 22	1528	3900
Iowa Payne Oil Co., Thom 1	1064	3753
Sinclair Prairie, Martin 5	*	3874
Wichita County—		
Dudley & Fisher, J. A. Fisher 2	*	1450
Warren 10	168	1368
Ross et al, Mitchell 26, lot 5	5	857
Wichita County (Wildcat)—		
Clark & Gilliland, J. L. Jackson 1	*	1655
Wilbarger County (Consolidated)—		
Consolidated et al, Waggoner Est. 5-CC	784	3784
Woods et al, Womack 1	712	3792
Wilbarger County—		
Pois & Schulz, Flanniken 2	300	1902
Young County—		
Cable Oil Co., Prideaux 5	*	641
S. D. Glover et al, Clarida 6	*	740
Chas. B. King et al, Johnson 9	*	635
M. & W. Oil Co., Keithly 1, sec 153	*	1050
Sams & Watson, Cullers 8, sec 2	5	604
Staley Oil Co., Ragle 1, sec 177	*	1075

West Texas

Andrews County (Means)—		
Humble, J. S. Means 71	1866	4526
Crane County (Gulf-Waddell)—		
Gulf, W. N. Waddell 28, sec 11	9832	3500
Ector County (Foster)—		
M. B. K. Drl. Co. et al, Gist 2-B	1297	4323
Shell, Witcher 8-B	1130	4277
B. F. Weekley Oil Corp., Johnson 1	1106	4172
Ector County (Goldsmith)—		
Eastland Oil Co., Cummins 3	1190	4205
Herbert et al, Cummins-Sinclair 4	359	4188
Ector County (Jordan)—		
Atlantic & Skelly, University 7-C	1357	3650
Cosden Pet. Corp., University 3.-C	1120	3672
Ector County (North Cowden)—		
Stanolind, Roberts 24	603	4400
Gaines County (Wasson)—		
Amon Carter et al, Wasson 4-E	574	5015
Hockley County (Slaughter)—		
Stanolind, Slaughter 4-B	1026	5030
Jones County—		
Butler-Horne Drl. Co. et al, Thompson-Sinco 1	281	2379
Fain-McGaha Oil Corp., Burns 1	308	1944
Iron Mt. Oil Co.-Humble, Jones-Stasney 9	962	3224
Jones County (Wildcat)—		
Erin Pet. Co.-Bells-Wells Oil Co., M. Caton 1	*	3400
Loving County (Wheat)—		
Fred Hyer et al, Russell 2	358	4275

Company, Well and Location	Init. Prod. Bbls.	Depth
Pecos County (Lehn)—		
Claude Campbell et al, Lehn 2	53	1722
Sahara Oil Corp., Sullivan 3-A	132	1710
Scurry County (Sharon) —		
Mudge Oil Co., M. Dozier 1	84	2475
Taylor County—		
S. B. Roberts Co. et al, Mitchell 1	110	1741
Terrell County (Wildcat)—		
P. Shirley-Lanham & Blakeney, Packingham 1	*	314
Tom Green County (Wildcat)—		
Cannon Bros. & W. B. Hagan, Bryant 1	*	466
Upton County (McCamey)—		
T. P. Coal & Oil Co., Lane 41-A	290	2046
Ward County —		
Gulf, E. W. Estes 126	3580	2687
O'Brien 119	110	2875
Ward Pecos Pet. Corp. (was Schkade), Boogher 3	8	2084
Yoakum County (Bennett)—		
Argo Oil Corp., Comer 3-A	681	5190
Magnolia, Mahoney 3	476	5215
Mid-Continent, Comer 2	1240	5174
Yoakum County (Wasson)—		
Aloco Oil Co., C. Wilder-Saltmount 2	1091	5175
Humble, L. P. Bennett 1	1037	5215
J. T. Herd 1	126	5215
Ed. Randall 5	516	5117
E. P. Stanford 1	513	5258
Shell, Baumgart 3-B	839	5190
F. W. Hensley 3	640	5278
T. P. Coal & Oil Co., Brownfield 3	861	5195

East Texas

Joiner Area—		
Hunt Oil Co., Bradford 23-D (176.3-ac)	200	3617
Bradford 27-D (176.3-ac)	350	3630
Bradford 28-D (176.3-ac)	225	3612
Longview Area—		
Atlantic, Lee 18 (111.67-ac)	3500	3934
Felsenthal et al, Glenn 4 (28-ac)	1200	3635
Anderson County (Cayuga)—		
Carter-Gragg Oil Co., Goode-Tidal 3	206	4017
Angelina County—		
McHenry et al, Russell 2	3	1005
Freestone County (Cayuga)—		
Amerada, H. Berk 10 (1057-ac)	195	4025
Houston County (Navarro Crossing)—		
Humble, M. Harper 1	103	5874
Navarro County (Wildcat)—		
Burk et al, Fee 1	*	1325

West Virginia

Boone County—		
Pond Fork Oil & Gas Co., Fee 14	¶.50	4216
Clay County—		
Pittsburgh & W. Va. Gas Co., Lirk 7705	¶.25	2075
Thompson Gas Co., Fee 39	¶.09	2271
Gilmer County—		
Pittsburgh & W. Va. Gas Co., Simmons 7711	¶.40	2022
Massey & Jarvis, Harris 1	¶.25	1375
Kanawha County—		
Ten Mile O&G Co., Dickinson 21	¶.06	2510
Columbian Carbon Co., Parsons 2	¶1.36	5162
Lincoln County—		
Bradyville Gas Co., Sweetland Land 2	¶.27	3087
Owens-Libby-Owens, Mitchell 1	¶.06	2416
Putman County—		
Henderson Dev. & Gas Co., Nicholas 1	¶.03	3810
Ritchie County—		
Jackson, United States Oil Co. 9	1	1650
Clem S. Morris, Parks 2	¶.05	1987
Hope Nat. Gas Co., Bickerstaff 6630	*	1913
Geho, Swadley 1	*	2048
Mole Hill O&G Co., Bradford 2	*	1175
Bickle Oil Co., Hall & Tetrick 10	*	1689
Roane County—		
L. L. Reed et al, Hinzman 3	20	1689
Wayne County—		
Southern W. Va. Gas Co., Mills 3	¶.09	3091
Wirt County—		
S. W. Douglass, Blankenship 2	2	1055

Wyoming

Niobrara County (Lance Creek Field)—		
Continental Oil Co., Apex 5 OPC-3, se ne sw 34-36n-65w	576	5552
(West Mule Creek Field)		
Fall River Royalty & Producers, Government 1, csl se se 35-40n-61w	60	2675
Park County (Oregon Basin Field)—		
Dry Creek Oil Co., Government 10, nw ne sw 9-50n-100w, (owdd, otd 1157 ft)	¶7½	1164

*Failures; †Junked; ¶Million cu. ft. gas.

WILDCAT REPORT
New Starts and Completions

STATE	WILDCATS STARTED		WILDCAT TESTS COMPLETED							
			Total		Oil		Gas		Dry	
	This Week	This Year	This Week	This Year	This Week	This Year	This Week	This Year	This Week	This Year
Alabama	...	5	...	3	...	...	...	...	...	3
Arizona	...	1	...	...	...	...	...	...	...	...
Arkansas	...	36	...	25	...	2	...	...	...	13
California	3	195	...	76	...	20	...	2	...	54
Colorado	...	4	...	2	...	...	...	...	...	2
Florida	...	3	...	1	...	...	...	...	...	1
Georgia	...	4	...	1	...	...	...	...	...	1
Illinois	11	621	18	475	4	37	...	2	14	436
Indiana	3	86	2	46	...	9	...	1	2	36
Kansas	7	248	7	228	...	58	...	10	7	160
Kentucky	1	70	3	42	...	8	...	...	3	34
Louisiana	...	127	3	111	...	14	...	3	3	94
North Louisiana	...	44	...	31	...	3	...	1	...	27
South Louisiana	...	83	3	80	...	11	...	2	3	67
Maryland	...	1	...	...	...	...	...	...	...	...
Michigan	10	268	5	328	1	22	...	...	4	306
Mississippi	2	29	1	11	...	1	...	...	1	10
Missouri	...	62	...	36	...	...	...	3	...	33
Montana	...	6	...	5	...	1	...	...	...	4
Nebraska	...	1	...	1	...	...	...	...	...	1
New Mexico	...	45	1	31	...	3	...	1	1	27
New York	...	1	...	5	...	1	...	2	...	2
Oklahoma	9	184	4	175	1	24	...	9	3	142
Ohio	...	4	...	12	...	1	...	...	...	11
Pennsylvania	...	3	...	6	...	...	...	1	...	5
South Dakota	...	2	...	2	...	...	...	...	...	2
Texas	28	1,085	19	1,133	...	100	1	26	18	1,007
East Texas	3	120	1	108	...	3	...	2	1	103
North Texas	5	143	3	220	...	28	...	1	3	191
Gulf Coast	4	117	1	96	...	9	...	1	1	86
Panhandle	...	11	...	11	...	...	...	1	...	10
South Texas	11	512	9	514	...	40	1	19	8	455
West Texas	5	182	5	184	...	20	...	2	5	162
Utah	...	2	...	...	...	...	...	...	...	...
West Virginia	...	2	...	1	...	...	...	...	...	1
Wyoming	...	7	...	4	...	...	...	...	...	4
Total U. S.	74	3,102	66	2,763	6	301	1	60	59	2,402

CALIFORNIA

FIRST REPORTS

Humbolt County—Texas Co.'s Holmes-Eureka 1, 2732 ft n 3301 ft e swc 22-3n-1w, rig.

Monterey County—Loma Grande Oil Co.'s Corey 1, swc 23-24-10, Bradley area, lcn.

Ventura County—Frank & Karl Lehndorfer, No. 1, 150 ft n 1520 ft e of c 30-3-19, Moorpark area, lcn.

ILLINOIS

FIRST REPORTS

Bond County—R. E. Jones' Huber 1, ne nw nw 28-6n-4w, Shoal Creek tnp, fishing at 1010 ft.

Bureau County—Kercher et al's Guither 1, se sw se 2-18n-8e, Walnut tnp, dr.

Clark County—Joe Hassett's Ingersoll 1, nw nw se 28-11n-14w, Parker tnp, sd 1714 ft.

Clay County—W. Bell's Tackett 1, n½ se se 5-2n-6e, Harter tnp, dr.

Clinton County—T. Palmer Oil Co.'s Bierman 1, nw nw se 20-1n-1w, dk for Devonian test.

Monroe County—Hughes Petroleum Corp.'s Fenala 1, ne ne se 15-3s-11w, Bluff tnp, dr.

Montgomery County—A. R. Taylor's D. E. Street 1, nw nw se 31-11n-5w, Pitman tnp, dr.

Wabash County—Pollock's Whiteside 1, nw ne ne 11-1n-12w, Wabash tnp, fishing at 1327 ft.

Washington County—Taylor Drilling Co.'s M. Pelka 1, nw sw sw 25-3s-3w, Pilot Knob tnp, dk. Magnolia Petroleum Co.'s P. Kozuszek 1, nw se nw 26-3s-3w, dr.

Wayne County—Stocker's Mary Creighton 1, se sw nw 9-2s-8e, dr 1000 ft. Successful completion would extend Boyleston pool.

White County—Kingwood Oil Co.'s Bayley 1, nw sw nw 2-7s-9e, rigging up rotary.

COMPLETIONS

Brown County—J. W. Fairbairn's Newton 1, sw sw se 33-2s-4w, Buckhorn tnp, abnd 415 ft in Niagaran lime.

Coles County—Perry Miller's A. S. Ingram 2, c s½ nw nw 16-11n-10e, Hutton tnp, abnd loc. Daugherty & Dunn's J. F. Mitchell 1, se ne sw 24-11n-10e, Hutton tnp, abnd 650 ft in Pennsylvanian sand.

Cumberland County—National Consumer's Ward 1, ne se ne 17-9n-9e, Woodbury tnp, top Tar Springs 2068 ft, abnd 2152 ft.

Edwards County—H. Thorpe's Broster 1, c nw se nw 33-1s-14w, Bone Gap tnp, top Ste. Genevieve 2987 ft, abnd 3098 ft. Noah-Morrison's W. Brown 1, nw ne nw 15-3s-10e, Dixon tnp, top McClosky 3276 ft, abnd 3374 ft.

Gallatin County—J. C. Ingram's Beverley & Turns 1, c ne 19-9s-8e, Equality tnp, abnd loc.

Hamilton County—Alma Oil & Gas Co.'s P. Davis 1, se sw se 9-7s-6e, Twigg tnp, top St. Louis 3365 ft, abnd 3389 ft.

Jefferson County—S. W. McGee's E. E. Halloway 1, nw nw ne 10-1s-1e, Grand Prairie tnp, top Bethel 2100 ft, abnd 2113 ft.

Marion County—Shell Oil Co.'s F. Lutz 2, nw nw se 18-3n-1e, Carrigan tnp, top Bethel 1429 ft, pumped 107 bbls oil and 39 bbls water, td 1439 ft. Fairman pool discovery.

Monroe County—Snell Oil Co.'s Unknown 1, nw sw nw 5-1s-10w, Columbia tnp, abnd loc.

Shelby County—J. Boeseke Jr. et al's M. C. Bigler 1, nw ne nw 12-9n-6e, Sigel tnp, top McClosky 2376 ft, abnd 2411 ft.

Wabash County—Nash Redwine et al's A. E. Shultz 1, nw se ne 36-2s-14w, Compton tnp, top Tar Springs 2136 ft, abnd 2180 ft. Marvel Oil Co.'s Laura Beall 1, ne nw sw 11-2s-13w, Coffee tnp, top McClosky 2703 ft, pumped 287 bbls oil after treatment with 500 gallons acid, td 2714 ft. Discovery of Rochester pool.

Washington County—Shell Oil Co.'s M. Dix 1, nw ne ne 19-3s-1w, Dubois tnp, top Bethel 1359 ft, pumped 46 bbls oil, td 1370 ft. Discovery of Dubois pool.

Wayne County—R. O. Harding's F. H. Simpson 1, n½ ne se 10-1n-6e, Indian Prairie tnp, top Ste. Genevieve 3186 ft, abnd 3312 ft. Whitcher Development Co.'s W. A. Frederick 1, c nw sw nw 12-1n-8e, Elm River tnp, abnd loc.

White County—Phillips Petroleum Co.'s Garner 1, se se sw 25-4s-10e, Phillips tnp, top McClosky 2955 ft, pumped 285 bbls oil, td 2961 ft. Discovery of Phillipstown pool.

INDIANA

FIRST REPORTS

Gibson County—Howard Johnson et al's Keifer 1, sw se se 26-1s-12w, loc. Jordan et al's W. E. Hollingsworth 9, c n½ sw se 13-2s-10w, loc for McClosky test in West Francisco pool.

Martin County—Pioneer Drilling Co.'s J. Meyer 1, ne ne sw 26-2n-4w, moving in material.

Vandenburgh County—J. L. Drake's B. Seib et al 1, 400 ft from south line and 200 ft from west line, nw nw 23-5s-10w, loc.

COMPLETIONS

Pike County—W. O. Allen Jr.'s Electric Shovel Coal Co. 1, 200 ft south line and 1155 ft from east line, se se 28-2s-7w, top Ste. Genevieve 1327 ft, abnd 1566 ft.

Vigo County—Ben H. Nation's E. Boyce 1, se se sw 33-11n-9w, abnd 2195 ft.

KANSAS

FIRST REPORTS

Barton County—Brunson's Wondra 1, cwl sw ne 15-17-12w, rig.

Butler County—Wixson et al's Bolin 3, se sw ne 1-27-6e, lcn.

Marion County—Harrington et al's Belton 1, sec ne 30-17-4e, lcn. Jones et al's Kapaun Estate 1, ne nw ne 16-18-4e, machine.

McPherson County—Central Petroleum Co. et al's Swanson 1, c n½ nw nw 18-20-5w, dr.

Russell County—Murfin et al's St. Aubyan 1, csl sw se 1-15-15w, lcn.

Stafford County—Shells' Smith 1, sec nw 9-21-1w, dr.

COMPLETIONS

Barton County—Schneider's Steckel 1, c w½ sw ne 11-20-12w, top Lansing 2715 ft, top Arbuckle 3351 ft, abnd 3375 ft.

Douglas County—Greenway's Grosdedier 1, c e½ se ne 24-13-20e, 10 mi n Baldwin pool, top Hertha 432 ft, abnd 740 ft.

McPherson County—Fain Drilling Co.'s Briggs 1A, cwl sw sw 21-20-5w, near Barnholdt pool, top Mississippi 3495 ft, abnd 3586 ft.

Osage County—Hollett's Butler 1, se sw se 28-20-15e, 6 mi n Burlington, top Mississippi 1617 ft, hfw 1639 ft, abnd 1639 ft.

Rice County—Stanolind's Bredfeldt 1, csl sw ne 2-19-10w, top Lansing 2960 ft, top Arbuckle lime 3335 ft, abnd 3349 ft. Garden et al's Misener 1, c n½ nw ne 21-21-7w, s Wherry pool, top conglomerate 3379 ft, top Mississippi 3391 ft, abnd 3420 ft.

Russell County—Shell's Bender 1, swc se 20-15-14w, top Topeka 2796 ft, top Lansing 3095 ft, top conglomerate 3354 ft, top Arbuckle 3378 ft, abnd 3430 ft.

KENTUCKY

FIRST REPORTS

Logan County—Jesse Ashby's M. S. Banderaught 1, 1840 ft from north line and 355 ft from west line sec 14-F-33, moving in material.

COMPLETIONS

Daviess County—Basin Drilling Co. et al's Howard 1, 2090 ft from north line and 1050 ft from east line, sec 11-N-28, abnd 1047 ft. Porter Evans' S. R. Ewing 1, 5800 ft from north line and 1700 ft from west line, sec 5-P-29, abnd 1887 ft.

Henderson County—J. L. Kennard et al's Marble City (A. Mann) 1, 2105 ft from north line and 4620 ft from east line, sec 10-Q-24, abnd 2375 ft after drilling through McClosky.

SOUTH LOUISIANA

COMPLETIONS

East Baton Rouge—Farris & Golding's McInnis 1, McInnis area, 58-7s-1e, abnd 7502 ft.

Jefferson Parish—Continental's Bernstein 1, Bayou Perot area, 2-16s-20e, abnd 12,149 ft.

Vermilion Parish—Louisiana Land's Louisiana Furs 3, White Lake area, 9-15s-1e, cored salt water sands 8900 ft, stuck drill pipe, junked.

MICHIGAN

FIRST REPORTS

Allegan County—Blood & Hendershots' Knox 2, se sw nw 4-2n-16w, rig. Twin Drilling Co.'s Plasman 1, se sw sw 24-4n-16w, dr.

Barry County—Transwestern Oil Co.'s O'Connor 1, ne se ne 1-4n-8w, dr.

Kalamazoo County—Fisher-McCall's Ballett 1, sw nw ne 32-1s-12w, dr. Smith Petroleum Co.'s Taylor 1, nw se 33-2s-10w, rig.

Kent County—Smith Petroleum Co.'s Weigele 1, nw nw sw 23-5n-9w, lcn. North American Drilling Co.'s Lamoreiux 1, sw sw nw 28-8n-10w, rig.

Ottawa County—Allegan Pipe & Supply Co.'s Fien 1, se se sw 35-5n-13w, dr. Freman Oil Co.'s Lanning 1, se nw sw 30-5n-13w, dr. Crown Development Co.'s Williams 1, se se se 7-8n-13w, rig.

COMPLETIONS

Allegan County—Socony-Vacuum's Schad 1, se se se 21-4n-11w, Traverse 1909 ft, abnd 1990 ft. A. S. Cochran's Kent 1, sw sw sw 2-2n-12w, Traverse 1743 ft, abnd 1845 ft. Sea-

board Oil Co.'s Dolezal 1, nw se nw 13-3n-11w, Traverse 1927 ft, abnd 2010 ft.

Cass County—Silver Creek Oil Co.'s Flynn 1, nw sw nw, 23-5s-16w, Traverse 806 ft, pay 809 ft, td 827 ft, sw 827 ft, pb to 823 ft, acidized 250 gallons, pump tested average 12 barrels first week.

Ottawa County—Weller & Dapar's Vos 1, ne se ne 33-7s-14w, Traverse 1781 ft, abnd 1821 ft, N. R. Dodd's DeKorne 1, ne nw ne 36-7n-13w, Traverse 1860 ft, abnd 1905 ft.

Van Buren County—Clapsaddle & Harris' Schiles 1, ne ne nw 27-1s-15w, Traverse 1128 ft, abnd 1153 ft.

MISSISSIPPI

FIRST REPORTS

Attala County—F. R. Jackson et al, Federal Land Bank Peeples 1, nw se 29-6n-9e, dk.

Sharkey County—Ralph E. Fair, Frank B. Houston Estate 1, ne ne 12-10n-7w, moving in rig.

COMPLETIONS

Wilkinson County—Louisiana Progress Oil, Inc., Young 1, 40-4n-1e, abnd 5750 ft.

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NEW MEXICO

COMPLETION

Chaves County—Meither et al's J. W. Smith 1, nw se se 30-11s-25e, elev 3539 ft, abnd 840 ft.

OKLAHOMA

FIRST REPORTS

Creek County—Waite Drilling Co.'s Garrett 1, nec 25-14n-10e, machine.

Garfield County—Gain Drilling Co. et al's Schnakenburg 1, ne se sw 31-21n-4w.

Kiowa County—B & M Drilling Co.'s Burnett 1, sw ne ne 30-7n-20w, dr.

Lincoln County—Harper et al's Shaeffer 1, nwc 6-16n-2e, rig.

Osage County—Peters Oil Co. et al's Osage 3, nwc se 4-28n-10e, testing Arbuckle lime at 2488 ft. McKnab's Osage 1, nw ne sw 15-29n-8e, sd 360 ft.

Pawnee County—Atkinson's Wilkerson 1, nw ne nw 14-22n-4e, rig.

Seminole County—Wood Oil Co. et al's Crow 1, sec 31-8n-6e, lcn.

COMPLETIONS

Cleveland County—Burton et al's Hirsch 1, nwc ne 17-9n-2w, Burton pool, top Simpson 7484 ft, td 7696 ft, 125 bbls. 38.5 gr.

Garfield County—Eagle Oil Co. et al's Legrange 1, nwc 8-23n-3w, 2 mi nw Barnes pool, top Mississippi 4975 ft, top Wilcox 5428 ft, abnd 5503 ft.

Grady County—Graham's Thomas 1-A, nw sw ne 19-5n-7w, 2 mi e Chickasha gas pool, abnd 3537 ft.

Okfuskee County—Aggis et al's Sporleder 1, nec nw 25-11n-9e, abnd 1672 ft.

WEST CENTRAL TEXAS

FIRST REPORT

San Saba County—Clyde D. Lane et al's J. E. McCoury 1, 1075 ft from s and 7594 ft from w lines of A. Dietz sur No. 45, rust for Ordovician test.

COMPLETIONS

Callahan County—Gallagher, Lawson & Callihan's Thornton 1, Anthony Bates sur, abnd 2225 ft.

Shackelford County—Young et al's Newell 1, T&P sec 8, blk 12, abnd 1660 ft.

WEST TEXAS

FIRST REPORTS

Ector County—Richmond Drl. Co.-Rhodes & Tompkins' T. P. Land Trust-Amerada 1, sw sw se T&P sec 19, blk 42, T-1-S, mim.

Pecos County—Phillips Pet. Co.'s Mrs. Sarah Byrne 1, sec nw H&GN sec 114, blk 11, mim for 1800-foot test. R. L. Walker & Clark-Hudson's White-Baker 1, nwc se GC&SF sec 86, blk 194, lcn.

Sutton County—Craig & Scoggins' J. S. Holman 1, 2310 ft from n and 990 ft from e lines CCSD&RGNG sec 25, 25 mi s Sonora, lcn.

Taylor County—W. L. Snoddy & H. W. Lee's T. H. Antilley 1, 220 ft from n and 2200 ft from e lines s½ sec 55, Blind Asylum Lands, ½ mi sw Elmdale, machine.

COMPLETIONS

Jones County—Erin Pet. Corp.-Bells Wells Oil Co.'s M. Caton 1, 220 ft from n and 1500 ft from e lines sec 4, Orphan Asylum Lands, abnd 3400 ft.

Terrell County — P. Shirley-Lanham & Blakeney's Packingham 1, ne ne sw CCSD& RGNG sec 45, blk B-2, abnd 314 ft.

Tom Green County—Cannon Bros. & W. B. Hagan's M. D. Bryant-Humble 1, 1350 ft from s and 234 ft from e lines of S. Kaul sur No. 753, abnd 466 ft.

NORTH TEXAS

FIRST REPORTS

Archer County—Shappell Oil Co.'s C. E. Carter 5, 150 ft out of nwc lot 39, blk 5, Clark-Plumb sur, 3 mi e Archer City, lcn for 2000-ft test.

Clay County—Howard L. Manley et al's Leonard Klein 1, 550 ft from n and 5460 ft from w lines Joe Evans sur A-132, 3 mi nw Henrietta, dr 880 ft.

Cooke County—Britt E. Cranfill and S. S. Staley's S. H. Peery 1, 1935 ft from se and 2025 ft from sw lines BBB&C sur A-145, 4 mi w and 2 mi s Muenster, lcn.

Hardeman County—A. Paul Gilbert et al's Robt. Weekley 1, 660 ft s and 330 ft w of se cor sec 87, but in H&TC sec 85, blk 16, mim for 4000-ft rotary test.

Wichita County—Bert L. Ligon et al's C. F. Collins 2, 1320 ft from s and 330 ft from w lines of J. T. Tyler sur A-568, 4 mi w Wichita Falls, lcn for deep test.

COMPLETIONS

Archer County—L. T. Burns et al's Jake Penartz 1, 330 ft out of sec lot 19, blk 4, Clark-Plumb sur, 2½ mi w by s Windthorst, Gunsight lime 1110-23 ft, show oil in sand 1123-56 ft, abnd 4657 ft. Perkins & Cullum's Falls County 183, 1563 ft from n and 1035 ft from e lines blk 21, Falls C.S.L. sur A-130, Gunsight lime 1130-37 ft, top Caddo 4688 ft, pb from 5065 ft, used acid in Caddo, then abnd.

Denton County—Kerlyn Oil Co.'s I. M. Hallmark 1, 150 ft from nw cor of tract, D. C. Cady sur A-307, 3 mi sw Pilot Point, top Ellenberger 2050 ft, abnd 2090 ft.

Wichita County—Clark & Gilliland's J. L. Jackson 1, 150 ft from s and 250 ft from e lines of w 120-ac B. Brown sur, abnd 1655 ft.

EAST TEXAS

FIRST REPORTS

Camp County—Harry S. Moss and Wm. C. McGlothlin et al's Joe Venters 1, 1320 ft s and 330 ft w of nec of east 45 acres of S. Wright sur, 2½ mi se Leesburg, elev 381 ft, co to dd from 5710 ft to lower Trinity.

Navarro County—J. R. Bunn Drl. Co.'s A. Stroeder 1, 150 ft out of sec 74-acre tr, J. White sur No. 819, 3 mi se Navarro, elev 320 ft, dr 815 ft.

Van Zandt County—R. E. Lee et al's M. L. DuBose 1, 400 ft from nw and ne lines of ne 55-a tr, J. Stockwell sur, 3 mi sw Canton, mim.

COMPLETION

Navarro County—J. H. Burk et al's Fee 1, 810 ft out of sec of tract and Edmondson sur, 1 mi n Powell, elev 398 ft, abnd 1325 ft.

TEXAS GULF COAST

FIRST REPORT

Chambers County—Geo. Anderson's Lawrence 1, n of Cedar Point, 2970 ft fr Bayshore road and 165 ft w of e line of A. B. Lawrence 300-acre tract in W. B. Smith, sur, lcn.

Galveston County—Sun's State 1-178, East Bay area, 1650 ft nw of SEc of sur and 660 ft sw of ne line of sur, in sec 178, lcn.

Harris County—Mayo & Thompson's Sharp 1, Almeda area, 466 ft fr n line and 446 ft fr e line of N. G. Haynie sur, lcn.

San Jacinto County—Harrison & Abercrombie's Lockin 1, Sheppard area, 467 ft w of w line of A. Carr 100 acre tract and 467 ft s of n line of H. H. Lockin tract in Wm. Hayes sur, lcn.

COMPLETIONS

Brazoria County—Humble's Smith 1, 466 ft n and w of sec of Kanawha, Texas Co. Subdivision, W. D. C. Hall sur, abnd 10,007 ft.

SOUTH TEXAS

NEW LOCATIONS

Atascosa County — Red Bank Oil et al's Pratt 1, 1230 ft w line of lease, 330 ft n of 60-acre tract F. D. De La Garza survey, lcn.

Duval County—Cox & Hamons Gorman-Hoffman 1, 330 ft se and sw line of BS&F sur No. 119, 2 miles e of Hoffman field, drilling 2580 ft. J. H. Turner's Society of the Propagation of Faith 1, sec 176 BS&F, 2½ miles e of Adami field, dr 525 ft. A. C. Whitman's Denman 4, 1400 ft n line, 933 ft w of No. 3 in 3188-ac tract Bale subd, loc.

Frio County—Pagenkopf et al's Houston 2, Juan Fequerroa sur, 2250 ft ne of No. 1, 2 miles n Frio City, dr.

Guadalupe County—A. J. Holifield's Day 1, James Hinds sur, 2 miles se Luling, rigging up.

Hidalgo County—Humble's Ogg, Jr. 1, lot 12, blk 5, Rio Bravo subd, porcion No. 64, 4 miles s McAllen, dk.

Jim Hogg County—William Goldston's Gutierrez 2, blk 11, Mayfair Oil Corp. subd, G. Gutierrez sur No. 163, El Peyote Grant, ½ mile ne Gutierrez discovery, rigging up.

Medina County — Cromwell & Cromwell, Schmidt 1, 330 ft s and e line of J. De La Roche sur, 908, 2 miles e of Noonan, dr 380 ft.

Milam County—Red Bank Oil Co.'s Henniger 1, 400 ft ne corner of 40-acre lease, S. C. Robertson sur, loc.

San Patricio County—Tom Graham Oil Co.'s Coates, 466 n and e lines sec 28, George H. Paul subd of the Welder Ranch in the East Mathis area, Seaboard farmout, loc.

COMPLETIONS

Bee County—Coronado Corp.'s Heard 1, 467 ft n line and w line of 150-ac lse M. Michael and J. Tool sur, 10 miles southeast of Beeville, 2 million gas, spray distillate through ⅛-in, tubing 1800, casing 1900 pounds, 5522 ft.

Duval County—Frank J. Gravis' Vaello 1, 330 ft n and w lines, 80-ac tr, in R. Fletcher sur No. 7, 2½ miles ne North Sweden field, abnd 6023 ft.

Guadalupe County—Pat Armstrong's Soefje 1, 10-ac tr, J. D. Clements sur No. 14, 1½ miles of Zoboraski field, abnd 2679 ft.

Jackson County—W. Stewart Boyle's Smith 1, 20-ac tr, Morris and Cummings No. 19, abnd 6010 ft. J. E. Hutchins et al's Appelt 1, J. R. Wickham sur, ab-271, 10 miles n of Ganado, abnd 3765 ft. Humble's Mestena 2, Francisco Pena Palo Blanca Grant, 7 mi se Hebbronville, abnd 6495 ft.

Kleberg County—Humble's Andrews 1, lot 13, blk 12, Kingsville Town sur, 2½ miles e of Kingsville, abnd 6000 ft.

Live Oak County—Amory Oil Corp.'s Moczygemba 1, lot 122, blk A, George West subd, 7 miles southwest of George West, abnd 1300 ft.

Victoria County—Renwar Oil Corp.'s Stoner 1, 330 w of RR, 800 ft se line of Diego Garcia sur ab-29, 8 mi s of Victoria, abnd 6015 ft.

Webb County—Boysen & Jones, Watkins 5-A, se sec 1, San Casimero Valentine De Las Cuentes gr, abnd 721 ft.

Williamson County—Jackson et al's Bland 1, Coursey sur, 2 miles se of Taylor, abnd 598 ft. Taylor Refining Co.'s Brymer 1, Simon Miller sur, 10 m se Taylor, abnd 2035 ft.

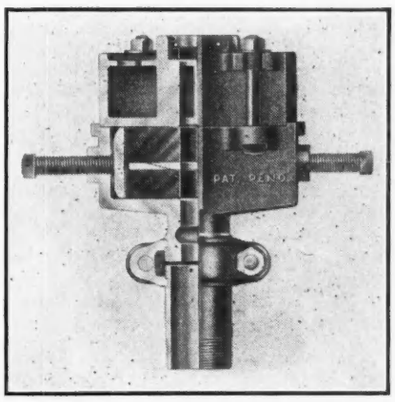
NOTES FOR THE Equipment Buyer and User

Stuffing Box

AMERICAN IRON & MACHINE WORKS COMPANY

American Iron & Machine Works Company, Oklahoma City and Houston, announces a new improved and simplified polish rod stuffing box. Major improvement, it is claimed, is the two-piece construction of this box.

The top part—the oil reservoir—can be easily detached and lifted from the lower section, which houses the polish-rod rubbers. By lifting the top section of the box, old polish-rod rubbers can be removed easily and quickly, thus making the installation of new rubbers a simple matter; this new construction also results in a considerable saving of time.



Improved American Stuffing Box

American polish-rod rubbers are constructed with a special lead insert, designed to eliminate the pitting and scoring of polish rods. Even where the polish rod is already in pitted or scored condition, use of the new American polish stuffing box, it is claimed, will restore the rod to its original smoothness.

The American stuffing box is manufactured in the wobbler type, for straight lift purposes.

Multiple-Operator Welding Sets

GENERAL ELECTRIC COMPANY

Redesign of General Electric Company's 1500-ampere constant-potential arc-welding sets for multiple-operator and machine welding has resulted, an announcement says, in more compact construction, lighter weight, improved appearance, and greater ease of installation. In addition, the improved equipment has the control for the motor and generator mounted on the base, making for greater convenience for the operator.

Constant-potential motor-generator arc-welding sets are especially suited for supplying the heavy current demands of modern automatic welding and the exacting requirements of production hand-welding by a number of operators. Where a number of operators are to be supplied from one set, advantage can be taken of the fact that the average hand-welding operation is not continuous. This diversity factor of the welding load allows the use of a smaller-capacity set in supplying a given connected load than would be required if each operator were supplied by a separate set, and because one large machine supplying a number of welding stations can operate at all times near its most efficient load point.

The sets are equipped with standard driving motors for operation on direct current, or on polyphase alternating current at any commercial voltage. Synchronous driving motors may be used to obtain plant power-factor improvement. This often results in materially reduced power bills.

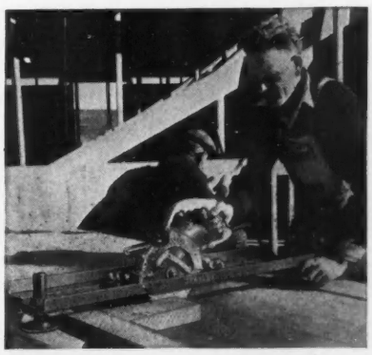
Saw Frame

STANLEY ELECTRIC TOOL DIVISION

Stanley Electric Tool Division, New Britain, Conn., announces a saw frame which makes it possible to cut many pieces of lumber to exact size desired without having to lay out and mark each piece separately.

The saw frame is structural steel and is used with Stanley Safety Saws Nos. W7, W8, W9, for square, bevel and bevel mitre cuts. It is adjustable for height from minimum to maximum capacity of saw by moving clamp nuts on each end of frame.

A stop pin in front clamp drops into bored holes in bench at any angle for other than straight cuts.

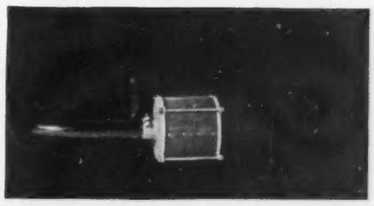


Stanley Saw Frame

Exhaust-Spark Arrester

AIR-MAZE CORPORATION

Air-Maze Corporation, 5200 Harvard Avenue, Cleveland, Ohio, has issued Form SAU-109, which describes its exhaust-spark arresters for stationary engines or engine-driven vehicles, designed to promote safety of operation in the vicinity of combustible gases or liquids.



Air-Maze Spark Arrester Installed on a Truck

Made in various sizes to fit engines from 25 to 600 cubic inch displacement, the element, embodying a patented

Standco
NO-SMOKE
STANDCO BRAKE LINING
Is the driller's best friend because it makes the easiest brake known and "feeds off" evenly while drilling. It never scores brake rims. See Page 2100 Composite Catalog.
Standco Brake Lining Co.
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TAKIN' ORDERS NOW
for The New OTIS Removable Bottom Hole Regulator
WRITE OTIS TODAY
PRESSURE CONTROL
INCORPORATED
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Packers, Insert Pump Anchors, and Swabs, manufactured by Merla Tool Corporation, are equipped with . . .

MURRAY RUBBER

Merla is one of numerous leading oil tool manufacturers who have standardized on Murray Mechanical Rubber Goods.

Our modern facilities and strict supervision of all work enable us to give the highest quality and efficient service on mechanical rubber goods and synthetic oil-resisting products.

MURRAY RUBBER COMPANY

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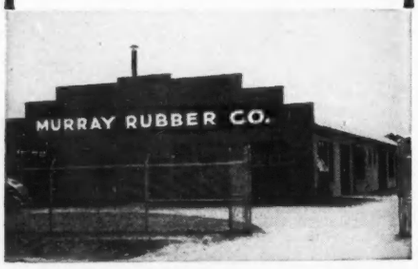


MacCLATCHIE

"Money-Saver"

PUMP LINERS

. . . are made by an exclusive process from special alloy seamless tubing and ground to a mirror finish. Absolutely uniform in extreme hardness, **these liners have no soft spots to hasten breakdown or cause pitting!**

And here's another important point — the wear-free gland used with "Money-Saver" Pump Liners can be quickly slipped off the worn liner and placed on the new one. Thus, you save on both shipping costs and maintenance costs —buying **only the liner itself** (without glands) when renewing MacClatchie "Money-Savers!"

Write for Complete Details

MacCLATCHIE MANUFACTURING CO.

COMPTON, CALIFORNIA

Mid-Continent-Distributor, BAKE TOOL COMPANY, Houston, Texas
Rocky Mountain Representative, E. C. DILGARDE, Casper, Wyoming
Foreign, GEORGE R. WOODS, 17 Battery Place, New York, N. Y.

NOTES FOR THE Equipment Buyer and User

principle, is constructed of stainless steel screen wire of selected mesh. The mounting neck base and end are constructed of a special metal which resists heat and stands up under severe service. Two or more threaded rods (depending upon arrester size) reinforce the complete assembly. Simple installation is made possible by a sturdy, clamp type neck, and additional support is provided by the extension of at least one of the threaded rods.

Gas-Operated Cutting Machine

The Airco No. 10 Planograph, a new 4-page bulletin published by Air Reduction Sales Company, 60 E. 42nd Street, New York, describes this gas-operated cutting machine designed for cutting straight lines, rectangles, circles and irregular shapes from ferrous metal of any thickness within the present practical limits of the cutting torch.

The bulletin contains a complete pictorial representation of the planograph, as well as operating details and specifications. Features of the device are listed, such as its wide cutting range, single or two-torch operation, centralized location of electrical controls, interchangeable devices for manual tracing or magnetic and templet tracing, and central gas control unit.

Air Reduction Sales Makes Change at Oklahoma City

D. F. McCandlish, formerly district manager, Air Reduction Sales Company, Oklahoma City, has been transferred to Detroit. G. J. Dekker succeeds at Oklahoma City.

General Motors Corporation to Exhibit at Tulsa Exposition

A contract for 15,000 square feet for the May 18 to 25, 1940, International Petroleum Exposition has been negotiated with General Motors Corporation, Diesel division. The company plans to erect a building of its own on the exposition grounds.

M. J. Bridges Joins Iverson

M. J. Bridges, formerly with Drillers Supply Company, Wichita, Kansas, has joined Iverson Tool Company, Tulsa. Bridges previously worked with the latter firm.

Ed Byers Moved to Tulsa

Ed Byers, sales engineer for Black, Sivals & Bryson, Inc., has been transferred from Oklahoma City to Tulsa, where he succeeds S. W. Hedlund who recently was moved to Chicago.

Bethlehem-International Supply Company introduced an artistic touch in modernistic designing in the recent construction of its supply stores. Pictured is the Houma, Louisiana store while three similar buildings are located at Alice, Avoca and Freer, Texas. The buildings are of steel construction with modernistic office fixtures and store shelving. This same design will be followed on any additional buildings erected at other store points in future expansion. T. H. Salter is district manager for the Houma store. Assisting Salter are O. L. Bell, store manager, J. B. Ellsey, assistant store manager, Arthur Webre and Roy Maness, field salesman.

NOTES FOR THE Equipment Buyer and User

New Duties for Brendel with Manning, Maxwell & Moore

Manning, Maxwell & Moore, Inc., Bridgeport, Connecticut, announces advancement of Louis H. Brendel to assistant to C. H. Butterfield, general sales manager. Brendel's new duties will include supervision of sales promotion and jobber relations for the Ashcroft American Gauge Division, the Consolidated Safety Valve Division, the American Schaeffer & Budenberg Instrument Division, and the Hancock Valve Division. Previously, he served as assistant sales manager of the Hancock Valve Division and performed the above duties for that division only.

Ingersoll-Rand Gets Pump-Condensers on Atlantic Tanker

Ingersoll-Rand Company has been awarded contracts for the condensers, condenser pumps and boiler feed pumps for a 19,405-ton, all-welded tanker to be built for The Atlantic Refining Company at Sun Shipbuilding & Dry Dock Company's yards, Chester, Pa. When the new vessel is delivered late in 1940, the Atlantic tanker fleet will contain the world's four largest welded ships. The three other Atlantic tankers of the same general type of construction—the "J. W. Van Dyke," the "Robert H. Colley," and the "E. J. Henry"—have all been added to the Atlantic fleet within the past two years.

LOUIS H. BRENDEL

Tulsa Chapter of Nomads To Organize January 8

A Tulsa chapter of Nomads is in the process of formation with January 8 set as the date of an organization meeting at which officers will be elected.

Two meetings have been held, the first at Fred E. Cooper Company on November 23, the second at the offices of Engineering Laboratories, Incorporated, on December 11. As a result of these meetings temporary officers were chosen with Fred E. Cooper, Fred E. Cooper Company and Allis-Chalmers Manufacturing Company, as chairman and H. M. Cosgrove, executive secretary, Purchasing Agents Association of Tulsa, secretary of the organization. William G. Green, Seismograph Service Corporation, C. O. Willson,, Oil & Gas Journal, and the above officers form the committee preparing the chapter by-laws.

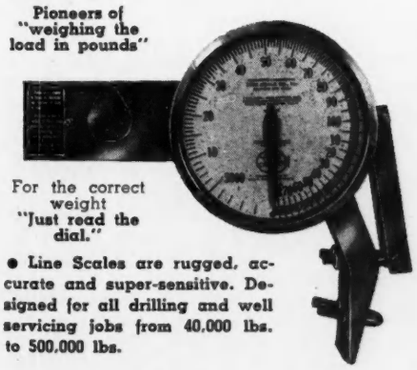
The Nomad organization is composed of equipment men and those who have acted in the interests or service of the petroleum industry outside the territorial boundaries of United States. Many Tulsans are qualified for membership through their foreign sojourns. Provision has been made in Tulsa Chapter by-laws for associate membership. Other chapters of Nomads are already organized in California and Houston.

Besides those members already mentioned, Don Hinderliter, Hinderliter Tool Company; Shep Miers, Kerotest Manufacturing Company; W. H. Lar-

A LINE SCALE affords you . . .

- GREATER ECONOMY
- SUPER SENSITIVITY
- PROVED ACCURACY
- LONGER LIFE
- GREATER EFFICIENCY

Pioneers of "weighing the load in pounds"



For the correct weight "Just read the dial."

• Line Scales are rugged, accurate and super-sensitive. Designed for all drilling and well servicing jobs from 40,000 lbs. to 500,000 lbs.

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OKLAHOMA CITY, OKLAHOMA
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GULF COAST SALES AND SERVICE
Brown Oil Tool, Inc., Houston, Texas

REED'S 'B-R' DRILLING BIT WITH WIRE LINE RETRACTABLE CORE BARREL

HARD FORMATION HEAD (Interchangeable with Soft Formation Head)

REED 'B-R' Drill Collar and 3-Blade Drilling Bit with Core Barrel in position

REED ROLLER BIT CO.

The World's Standard In Shallow Well Cups

Dragon's 3 Champions for Endurance Runs . . .

Dragon Composition (for deep wells); Nobs Composition (for shallow), and Dragon Leather cut costly delays. Built for long, tough going, they are Champions in any endurance test.

Tailor-made by men who specialize in their one job, Dragon Cups are of toughest known materials and processed by our own secret formulas—to meet every rigorous test when on duty.

Specify them—*by name*—every time—at your favorite Supply Store.

THE DRAGON MFG. CO.
Marietta - - - - - Ohio

Since 1912 . . . "On Duty or in Competition . . . as Fearless as the Dragon."

NOTES FOR THE Equipment Buyer and User

kin and C. F. Daugherty, Larkin Packer Company; Frank Wheatley, Wheatley Brothers; G. H. Westby, Seismograph Service Corporation; W. R. Braden, Braden Steel Corporation; Harold E. Cooper, Fred E. Cooper Company; W. C. Wadsworth, Westcott Valve Company; Ernie Richards, National Tank Company; Guy S. Connors, Williams Brothers; D. B. Church, Dowell, Incorporated; A. J. Edwards, Black, Sivalls & Bryson, Incorporated, and Paul M. Raigorosky, Petroleum Engineering, Incorporated, make up the Nomad roster.

Bayless Presents Film Before Pennsylvanians

F. B. Bayless, of the Oil Well Supply Company, presented an exhibit and film on sucker rods during the third and final session of a producers' forum held in Oil City, Pennsylvania, last week under the direction of the Pennsylvania Grade Crude Oil Association.

Bowers in New York

Don S. Bowers, vice president and general manager of W. C. Norris, manufacturer, Tulsa, has been in New York attending a meeting of the board of directors of the National Association of Manufacturers.

Committees Arrange Details for 1940 Exposition at Tulsa

Members of all of the various divisions of the oil industry will have special events, entertainments and meetings planned for them for the week of the International Petroleum Exposition, May 18 to 25, 1940, with separate committees set up for each division.

Special days will be designated for each group and committees which will be set up include the fields of exploration, international delegates, production, pipe line, refining, natural gasoline, drilling contractors, safety, purchasing agents, marketing, old-timers, young oil executives, and petroleum engineering students.

Seven foreign nations have already indicated to exposition officials their intention to send official delegates to Tulsa for the show. Unusual international interest is expected this year, with Greece, Turkey, Canada, Germany, Mexico, Venezuela and Italy having already sent in their advance notifications. The German reservations were mailed about October 15, after the beginning of the war.

The international delegates committee has been divided into three groups to care for this increased foreign attendance. James H. Gardner, president of Gardner Petroleum Company, Tulsa, will head the local committee; Barton A. Myers, director of International Petroleum Company, Toronto, Canada, is to be chairman of the foreign attendance committee; and the Nomads club, an organization of oil field supply firm representatives who travel extensively internationally, will provide for the entertainment of foreign delegates during their stay in Tulsa.

Other committee chairmen who have already been appointed include H. M. Stalcup, vice president in charge of production, Skelly Oil Company, Tulsa, production committee; H. M. Cosgrove, executive secretary of the Purchasing Agents Association, Tulsa, purchasing agents committee; Embye Kaye, manager of recycling operations, Tide Water Associated Oil Company, Tulsa, refinery committee; H. W. Boggess, superintendent of safety, Sinclair Oil Companies, Tulsa, safety activities committee; J. A. LaFortune, vice president of Warren Petroleum Company, Tulsa, natural gasoline committee; Dr. Gustav Egloff, director of research, Universal Oil Products Company, Chicago, scientific and technical committee; and R. W. McDowell, vice president in charge of sales, Mid-Continent Petroleum Corporation, Tulsa, marketing committee.

The scientific and technical committee is planning this year to increase the scope of the hall of science to include permanent exhibits of recent developments in the oil industry. These would be open to the public at all times.

Dean R. L. Langenheim of the University of Tulsa engineering school, announces that the Tulsa school will again sponsor the bringing to Tulsa of petroleum engineering students from other engineering schools throughout the country during the week of the Tulsa show.

The contest for the "grand old man of the oil industry" will again be held this year, with arrangements being handled by the old-timers committee under the chairmanship of H. R. Gruber, retired oil man. Gruber announces that those wishing to nominate candidates for this honor should address International Petroleum Exposition, Tulsa, for application blanks.

A young executives committee, headed by William Baden, Warren Petroleum Company, Tulsa, will have the cooperation of the Tulsa junior chamber of commerce in providing a luncheon, speakers, and a special tour to study seismograph operations for visiting young oil executives.

Special plans for a dinner for engineers and technical men are being made by the Engineers' Club of Tulsa.

The exposition housing bureau is already at work compiling a list of places for visitors to stay while in Tulsa. Earl Sneed, president of Sneed Oil Company, Tulsa, is chairman of this committee. His group will be assisted by a hospitality committee of the Tulsa chamber of commerce, the chairman of which is Phil W. Bohart, Gulf Oil Company, Tulsa.

Early in January the transportation committee under the chairmanship of A. F. Winn, vice president of Spartan Aircraft Company, Tulsa, will meet with railroad and airline officials in an attempt to provide reduced passenger and freight rates to facilitate the getting of materials and exhibits to Tulsa for the oil show.

Complete stock (including Standard, Malleable and Cast Iron Fittings and Nipples) always carried by J. E. Bobo, 2120 Rothwell Street, Houston, Texas, and at the factory.

DEVLIN
HEAVY OIL MALLEABLES

No pipe line failures through faulty fittings! All DEVLIN Heavy Oil Malleables are made from highest quality materials, accurately tapped and threaded . . . all DEVLIN products are carefully inspected during manufacture and before final shipment.

STANDARD MALLEABLES
Elbows, Tees, Crosses, Y's, Return Bends, Couplings, etc. Black or Galvanized. Write for literature showing sizes and prices.

FRETZ SEAMLESS NIPPLES
Made from new high quality tested seamless tubing . . . accurately threaded . . . carefully reamed. Standard, Extra heavy, Double Extra heavy, Black or Galvanized. Shipped with distinctive Devlin Thread Protectors.

Send for Catalog 15-A

THOMAS DEVLIN MANUFACTURING CO.
BURLINGTON, NEW JERSEY

Squeaks from the Bull Wheel

Ahem

Daughter—Oh, Father, how grand it is to be alive. The world is too good for anything. Why isn't everyone happy?

Father—Who is he this time?

Co-Eds

"Do you mind if I borrow your tweed coat?"

"Certainly not. But why all the formality of asking permission?"

"Oh, I can't find it."

Information

Kindly clergyman, pinching the boy's knee: "And who has nice chubby pink legs?"

Little Boy: "Mamma."

Auto to Blame

She came home with her hat on one side and her clothes all crushed looking.

"Looks as though she's been knocked down by a motorist," said one neighbor sympathetically.

"Or picked up," said another, thoughtfully.

Close Call

"I had a narrow escape last night!"

"What's that?"

"Well, I woke up in the middle of the night and saw something white in my room. So I grabbed my gun and shot it. After I had turned on the light I found that it was my shirt."

"I don't see any narrow escape to that."

"Why, just suppose I hadn't taken my shirt off last night!"

Bride's Complaint

"Now, dear, what'll I get if I cook a dinner like that for you every day this year?"

"My life insurance!"

Sh-h-h

Why is father singing so much tonight?

He is trying to sing the baby to sleep.

Well, if I was baby, I'd pretend I was asleep.

Humph!

"Is there an encyclopedia in the office?"

"No, sir, but what is it you wish to know?"

Tactful Doubt

Office Boy: "I think you are wanted on the 'phone."

Boss: "You think! Aren't you sure?"

"Well, the voice said 'Hello, is that you, you old ————?'"

Exaggerated

Sign at swimming pool: "25,000 gals. in and out every hour."

Observer: "That's a lie; there ain't that many women in this town."

Epidemic

MacGregor and MacPherson decided to become teetotalers, but MacGregor thought it would be best if they had one bottle of whiskey to put in the cupboard, in case of illness.

After three days, MacPherson could bear it no longer and he said, "MacGregor, I'm not verra weel."

"Too late, MacPherson, I was verra sick mesel' all day yesterday!"

Some Doubt

"Do you consider this defendant a reliable man? Has he a good reputation for truth and veracity?"

"Well, to be honest with you, your honor, the man has to get somebody else to call his hogs at feeding time. They won't believe him."

Wants Quiet

"I wish you would speak to the people upstairs. This morning at three o'clock they were jumping up and down and banging the floor. I won't stand for such disturbances."

"How did you happen to hear them at that time of night?"

"I was practicing on my saxophone."

Verily Verily!

Tourist: What a quaint little village! Truly one-half the world is ignorant of how the other half lives.

Native: Not in this village, mister; not in this village.

Poultry Notes

"Are those hens over there sitting or setting on their nests?"

"We don't pay much attention to that. What we want to know is, when they fly down and cackle, are they laying or lying?"

E. & O. E.

Hubby and friend wife were going over the budget. He ran across an item, "H. O. K. $3," and another, "H. O. K. $7."

"My dear," he asked, "what are these frequent items, H. O. K?"

His wife replied, "Heaven Only Knows."

Cutting Overhead

"What are the ladies of the club discussing now?"

"A scheme to fix up the war debt."

"Do they wish to remit it?"

"No, their idea is to take it out in gowns and hats."

Aha!

"Waiter, what is this?"

"That's a Scotch rarebit, Sir."

"And what is a Scotch rarebit?"

"A Welsh rarebit, with less cheese."

Betraying Their Origin

Whenever I get down in the dumps I buy myself a new hat.

So that's where you get them!

Change for the Better

"But you guaranteed that this pen would last me a lifetime."

"I know—but you didn't look very healthy the day you bought it."

The Perfect Gift

FOR YOUR POWER PLANT!

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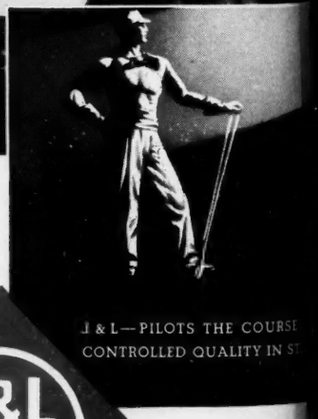

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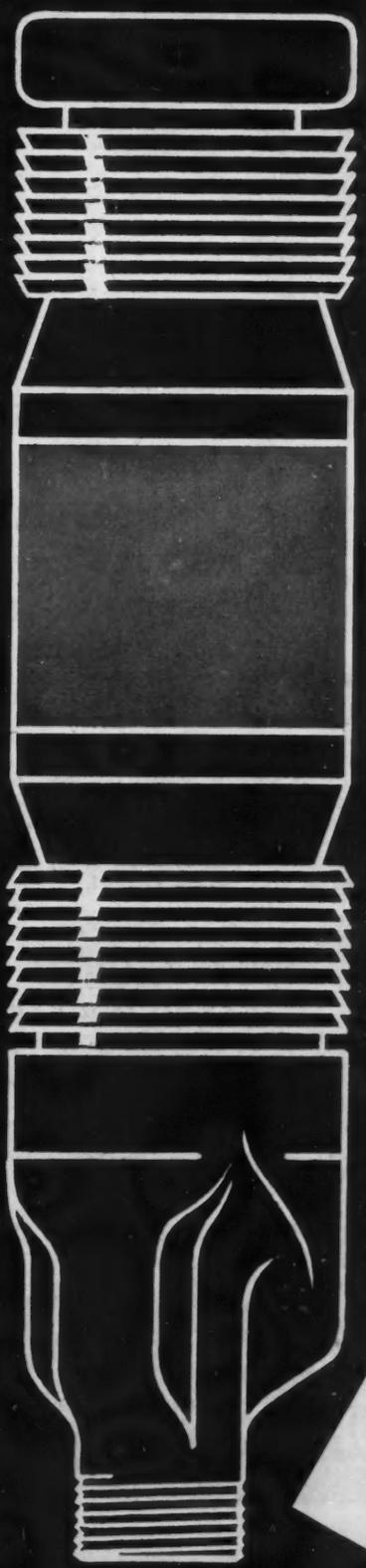
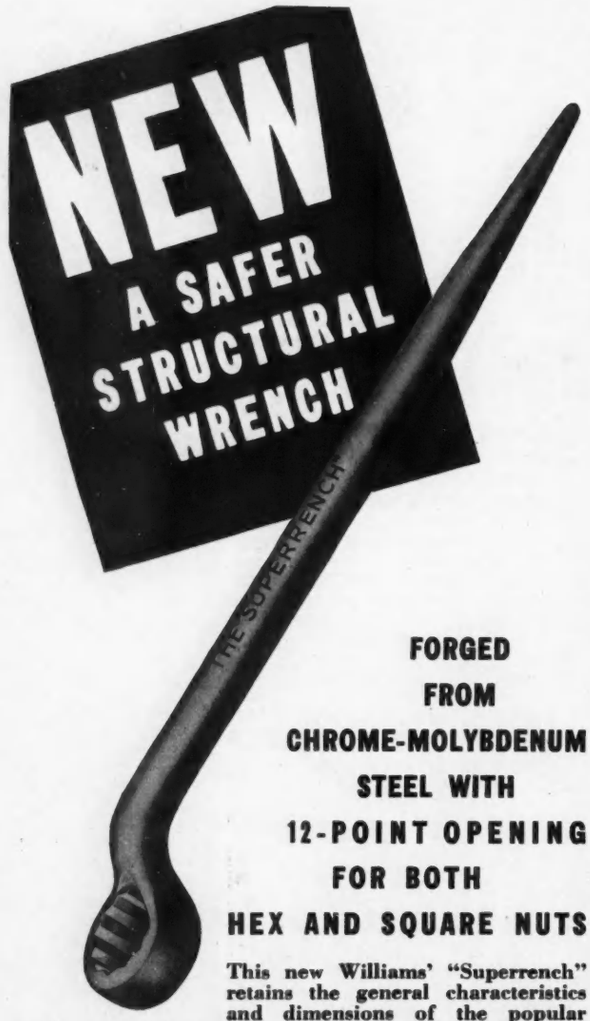


All of the applications for the Baker Cement Retainer are illustrated and described in detail in the Baker Broadcast No. 17-A, a comprehensive 40-page treatise gladly sent upon request. Complete information will also be found in the Baker Section of your Composite Catalog.



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LOOKING AHEAD

WITH THE EDITOR

Annual Year-Book Number to Be Issued on January 29, 1940.

HOW would you like to be able to remember all the technological, economic, legal and news developments of importance during 1939?

An index of material published during the year, by subjects and by authors, will take up 16 pages of the Yearbook-Forecast issue of THE OIL WEEKLY to be published January 29, 1940.

What the economists expect regarding export and domestic consumption during 1940 will be the subject treated in another feature of that issue, as will the outlook for maintaining or augmenting crude reserves in 1940.

Three pages of the January 29 issue will be devoted to a forecast of wells to be drilled in 1940, with a breakdown by states and districts, while two pages will be devoted to a forecast of footages to be drilled in various states and districts. Probable drilling expenditures will be handled in a separate paper.

Discussion of possibilities of new records in drilling depths and in production, together with a listing of records established in 1939, will be treated in still another article. Added to these will be prognostications by district editors of prospects for finding new fields in each district, a compendium of forecasts that will make the January 29 issue an exceedingly worthwhile one.

SINCE federal control possibility has occupied news limelight recently an outline of prospective oil legislation and new oil laws in 1940 will be of interest. The subject will be treated in the January 29 issue. So, too, will the indicated effect of current oil inventories on the industry in 1940.

THE Yearbook-Forecast issue will contain outlook treatises on 1940 world crude-oil production, on oil-industry earnings, and on drilling abroad. It will also go into the outlook for pipe line construction and the matter of how producers will be affected by recent developments in the refining division of the industry.

Those are only some of the reasons why the editors believe that the Yearbook-Forecast issue of THE OIL WEEKLY of January 29 will be the most interesting and valuable number of the publication to date.

THE OIL WEEKLY, Published every Monday. Entered as second-class mail matter December 23, 1916, at the post office at Houston, Texas, under act of March 3, 1879.